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Central Kerala Nayar

Nayar: Central Kerala

The Nayars, unlike the groups so far described, form only a part-society—a named category of castes within the social system of south-west India. An account of their kinship system therefore requires a sketch of the political and economic system in which they were embedded. It seems to have been the Nayars' role as a specialized occupational group within a complex society which accounted for the most unusual features of their kinship institutions.

The Nayars differ also from the other groups considered with regard to their relatively high level of technological development. At least from the first century A.D., Kerala's social structure was based upon plough agriculture with irrigation, specialized crafts, and overseas trade (K. M. Panikkar, 1945: 38). Productivity was sufficiently high so that more than one-quarter of the population could be exempted from manual labor and set apart as specialist, literate groups engaged in religion, government, warfare, and wholesale trade. The Nayars, as the ruling and military castes, formed the core of this aristocracy and probably comprised between one-quarter and one-fifth of the total population.[1]

Partly as a result of direct legal changes brought about since the British conquest of 1792, and, more deeply, as a result of the change to an industrial fuel technology, the Nayar system of matrilineal groups has been gradually disintegrating over the past hundred years. Some of the traditional functions of these matrilineal units are being taken over by the elementary family and by the wider, personal, bilateral kindred of each individual. Other former functions of matrilineal groups have passed to such modern bureaucratic institutions as government, army, law court, and school. Because this book is a comparative study of matrilineal systems, I shall concentrate on Nayar lineages and kinship in the "traditional" period before the British

[1] Buchanan estimated the population density of Central Kerala at 100 per square mile in 1800 (1807, II: 501). The density for Cochin State was 814 per square mile in 1931 (Census of India, Cochin State, 1931).

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nese (from at least the sixth century) and after 1498 the Portuguese, followed by the English, Dutch, and French (Logan, 1951, I: 251–254, 258, 294–399).

The coast falls roughly into three natural divisions: the coastal strip, the midlands, and the highlands rising into the Ghats (cf. Buchanan, 1807: 565–566). The coastal strip is flat and sandy. Its chief product is coconuts, with some rice and bananas. In the southern half it is broken by salt-water lagoons which for over a hundred miles form a continuous navigable chain parallel to the sea. Most of the chief towns are situated on the coast, divided by chains of little fishing villages. Many of the coast towns are ancient, and most of them lie at the mouths of navigable rivers which flow westward from the Ghats. From time immemorial raw materials, chiefly pepper, were brought by boat from the inland hillsides for shipment from these ports.

The midlands comprise low hills and fertile valleys. Broad strips of alluvial rice lands lie in the valleys, thinning out as the land rises into the foothills of the Ghats. On the hill slopes are gardens of coconut palms, bananas, pepper, ginger, and many fruit trees such as jack and mango. It was probably wild pepper which was exported in Roman times, but pepper and other spices have been deliberately cultivated at least since 1290 (Ricci, 1931: 328). Cashew nuts, introduced by the Portuguese, formed an additional export crop. Small merchant settlements, market-centers, and the military fortifications of petty chiefs existed at strategic points on river banks. Some of these centers grew into bazaar towns in the nineteenth century. But the mass of the population traditionally lived, as today, in scattered village communities on garden land surrounding or surrounded by fields of wet rice, the main subsistence crop. Wet-rice cultivation depended on plough agriculture with teams of oxen or water buffalo. Goats and chickens were the other significant domestic animals.

The highlands rising into the Ghats were covered mainly by deciduous forests. The foothills, interspersed with occasional rice flats, were sparsely populated by people of the same cultural groups as those in the plains. They eked out their wet-rice cultivation with garden crops of fruits, spices, and vegetables, with shifting hoe cultivation of dry grains on hillsides, and with forest hunting of elephant, deer, and pig. Higher in the mountains lived primitive tribes of hunters and shifting cultivators, having only occasional contacts with the kingdoms of the plains.

Throughout most of the area Kerala's rainfall varies between 75 and 170 inches, being heaviest in the north where the mountains are

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nearer to the sea (Innes, 1908: 270). The temperature varies from 70° to 90° and humidity is always high. Unlike most of the great kingdoms of India, Kerala had no single great river and no extensive, centrally organized irrigation system. Instead, her cultivated crops and lush vegetation depended on the heavy rainfall and numerous small rivers and streams by means of which small-scale irrigation was easily possible to groups of families.

Further, the heavy rainfall, seasonal floods, and hilly terrain made communications difficult until modern times. Before the partial conquest of Kerala by Mysoreans from the northeast in 1766, there were no roads, wheeled vehicles, or pack animals. The kings maintained small cavalry forces only in the coast towns, traveled in palanquins, and employed runners to carry messages to their vassal chiefs. Goods were dragged downstream by elephants, transported in boats, or carried on the backs of men. Armies moved slowly; local nobles sometimes rebelled against their rulers but warfare was abandoned in the heavy southwest monsoon season from May to September. The difficulty of communications and the lack of a centrally organized irrigation system may have been connected with the fact that Kerala had no regular land tax until the 1730's (*ibid.*: 308). Instead, the revenues of her rulers came from tribute in kind supplied by subordinate nobles, and from taxes levied upon overseas trade (Logan, 1951, II: ccxviii; Innes, 1908: 307–308).

In spite of the overseas trade, most of Kerala's villages were traditionally self-sufficient for the basic necessities of life. Quantities of manufactured goods were brought to Kerala's ports from other parts of India for shipment to the Middle East, but indigenous crafts such as weaving, metalwork, pottery, and basketry remained simple and served local needs. Kerala thus had no large urban castes of craftsmen and no indigenous merchant castes, but only immigrant communities of Syrian Christian, Jewish, Muslim, and, later, European merchants and Hindu merchants from other kingdoms of India, all concentrated in the coastal towns. The limited nature of trade and crafts and the comparative self-sufficiency of village life also help to account for the relatively decentralized political structure.

History

Little is known of Kerala until the first century A.D. It then formed part of the kingdom of Chera, whose capital was probably east of the Ghats at Karur on the Kaveri River in the modern Trichinopoly district. Chera, like its companion South Indian kingdoms, Chola and

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Pandya, appears to have grown powerful on the basis of trade with Rome. Like Chola and Pandya, it was a Tamil kingdom; Malayalam, the modern language of Kerala, did not diverge from Tamil until about the tenth century (Sastri, 1955: 400). It is clear from the Tamil literature of the Sangam period that the basic features of Kerala's division of labor, caste system and village organization, must have developed during or before the Chera period (*ibid.*: 110–140). The three South Indian kingdoms temporarily disintegrated in the late third century, probably as a result of a sharp decline in Roman trade.

There is no mention of any matrilineal caste like the Nayars in the Chera kingdom. When and whence they came is uncertain. The most plausible suggestion is that during the Chera period they were a matrilineal hill tribe occupying the Ghats under chiefs who owed a tenuous allegiance to the Chera kings. They may have descended to the Kerala plains as invading barbarians about the fourth century, when the Chera kingdom collapsed (Ayyar, 1938: 43). Little is known of Kerala between the Chera period and the thirteenth century. All or a part of it passed under the rule of a succession of viceroys (Perumals) from various South Indian kingdoms to the east of the Ghats. The date of the last Perumal is quite uncertain. Many writers concur in placing him in the early ninth century, but he may possibly have lived as late as the thirteenth. Nayar chiefs and Nayar soldiers are first mentioned in three copperplate inscriptions, tentatively dated late seventh, mid-eighth, and early ninth centuries. The inscriptions record grants of land and judicial privileges on the coast to settlements of Jewish and Syrian Christian traders (Logan, 1887, I: 265). The grants were made by rulers of Kerala, presumably Perumals, and were witnessed by Nayar chiefs of Venad, Ernad, Walluvanad, and Palghat. All these districts were famous Nayar chiefdoms in the later periods and persisted until the eighteenth century. The plates suggest that Nayar chiefs with private armies had emerged as vassals of the Perumals at least by the ninth century. By the mid-thirteenth century, at the latest, the greater Nayar chiefs had become independent small kings, and the Perumals had disappeared.

Chinese had resumed trade with Kerala sometime in the Perumal period, and in the thirteenth century this trade greatly expanded under the empire of Kubla Khan. Concomitantly, two coastal Nayar chiefdoms with strategic ports expanded into small kingdoms by conquering the surrounding inland chiefdoms and monopolizing their trade. In the north was the Kolattiri kingdom centered about Mount Eli, and in the south the kingdom of Travancore or Venad, centered

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175 about Quilon (Ricci, 1931: 326–330; Logan, 1951, I: 282–283). Chi-
439 nese trade declined in the late fourteenth and early fifteenth centuries,
635 but that of Muslim Arabs (who had visited the coast from the eighth century) greatly increased. In the fourteenth century a third Nayar kingdom around Calicut, in the center of the coast, had expanded with the help of Arab merchants (Major, 1857: 13–18). By the time the Portuguese arrived, in 1498, Calicut practically monopolized the Arab trade, and the Zamorin (king) of Calicut held overlordship from Pudupattanam south to Porakkad (Logan, 1951, I: 293–294; Ayyar, 1938: 273, 291). Trickles of trade continued in Kolattunad and Travancore, but the kings there had grown weak by comparison with the Zamorin. Kolattunad had become divided into three virtually independent little kingdoms, and the Travancore ruler had surrendered large powers to the subordinate local chiefs of his realm. Two other small kingdoms remained independent in the interior to the east of Calicut: Walluvanad and Palghat.

The period 1498 to 1792 was one of bitter struggle between Euro-
175 pean and Middle Eastern powers, who formed shifting alliances with
439 native rulers for control of the pepper trade. By 1600 the Portuguese
648 had practically abolished the Arab trade, but they were themselves driven from the coast by the Dutch in 1663. The English reached Kerala in 1615 and the French in 1725. Each European trading power allied itself with one or another Nayar ruler and took part in successive battles until, in 1766, the northern half of the coast was overrun by Muslim armies from Mysore to the northeast. The Mysorean occupation ended in 1792 with the settlement of the whole area by the English East India Company and the establishment of the British bureaucratic political system (Logan, 1951, I: 404–473).

175 Shortly before the Mysorean invasions Kerala was divided into nine
648 small kingdoms and a number of border chiefdoms owing only ten-
635 uous allegiance to some king. The British after 1792 amalgamated the seven northern kingdoms (Kolattunad, Kottayam, Kurumbranad, Kadattunad, Calicut, Walluvanad, and Palghat) to form the Malabar District of Madras Province, pensioned their rulers, and brought them under a British district officer responsible to the government of Madras. Cochin, a small kingdom in the center of the coast, remained a native state under its own ruler subject to the advice of a British Resident. So also did the southernmost kingdom of Travancore, whose ruler had already in the 1730's established a standing army, dispossessed his Nayar nobles, and formed a bureaucratic government. Kerala remained divided in this way until after the in-

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lage; and bow makers, each with about one to ten houses per village. Tiyyars, astrologers, washermen, and barbers had double unilineal descent: localized patrilineages with dispersed exogamous matrilineal clans. Artisans and bow makers had patrilineages only.

The polluting castes worked for each other and for the higher castes. Tiyyars held land on a sub-tenure from landlords and Nayar tenants. Astrologers and artisans gave services to the higher castes, to each other, and to the Tiyyars, who ranked above them. Barbers worked for all the higher polluting castes but not for the "good" castes, who employed the Nayar barber. Washermen laundered for all the higher polluting castes but not regularly for the "good" castes, who employed the Nayar washerman. However, the low-caste washerman's lineage owed services to the "good" castes at death, menstruation, and childbirth. Bow makers served Nayars and Tiyyars. Each of the polluting castes was endogamous and interdined only within the caste.

THE LOWER POLLUTING CASTES

On the outskirts of the village, in separate small hamlets, lived the very low castes of Parayas and Pulayas. Parayas were a small caste of basket and umbrella makers. Two or three households had a village right to serve all castes above them. Pulayas were until 1850 the agricultural serfs of Nayars, temple servants, and Brahmans (Buchanan, 1807: 370–372). As highly polluting castes, Pulayas and Parayas were theoretically forbidden to approach the high castes within a distance of sixty-four feet. They might not enter the "good" area of the village or walk on the main paths.

OTHER RELIGIOUS GROUPS

Muslims, called Mappillas, were concentrated in the Zamorin's kingdom, where they followed patrilineal descent. In 1931 they formed about 15 per cent of Kerala's population. Their presence dates from the ninth century, when Arab traders began to make converts, probably mainly from the Tiyyars and the coastal caste of fishermen. From the Arabs and from these converts there sprang a flourishing trading community which increased greatly in the fourteenth century (Logan, 1951, I: 192–197). The Zamorins derived a large measure of their power from the Muslims through taxes and naval support (Ayyar, 1938: 54). Muslims lived mainly in the ports and at inland trading posts on the banks of rivers. They were partly outside the village ranking system, which had its basis in differential land rights, and were theoretically outside the Hindu religious hierarchy. Nevertheless, Muslims were in some contexts accorded a rank ritually and socially between that of Nayars and Tiyyars.

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originally rendered a portion of the produce to the landlord and additionally paid tribute in kind at New Year and at the succession of a new landlord or a new tenant on the death of the old (*ibid.*, I: 605–614). In return for their hereditary land rights tenants owed military and personal services to the landlord or to his military representative.

Each Nayar tenant household, like the landlord, retained a portion of land for cultivation by its serfs. Serfs were attached to the plots on which they lived, took the house name of their masters and were held as ancestral property. The master supplied the serf with daily rice, building materials, a house site, and special gifts at life crises and festivals.

Each tenant household also gave some lands to cultivating subtenant households (*verumpāttamdar*) of the Tiyyar caste. According to Logan, the latter traditionally retained one-third of the net produce and surrendered the rest to their masters (*ibid.*, I: 583).

The Nayar servant castes and most of the polluting castes of village servants (astrologers, artisans, bow makers, basket makers, etc.) owed their main services to the landlord, the Nayar tenants, or both. Each family held the hereditary service right of a village or occasionally of a small group of adjacent villages. Village servants gave their services to the appropriate higher-caste households when required. In return they received from each patron household customary biennial shares of rice and other goods after the two harvests of the year. Each servant family held a house site and garden from the landlord by hereditary right and was provided by its various patrons with the materials (metal, wood, etc.) of its craft.

Among the higher polluting castes, most of the village servants (astrologers, artisans, washermen, barbers, etc.) simply exchanged services reciprocally without making gifts of grain. Within this range of castes, however, Tiyyars, as cultivators, were subsidiary agents of redistribution, for they received the services of almost all the village servant castes and made biennial gifts to them of grain.

The village was thus almost self-sufficient for food and the daily necessities of life. In addition, part of its produce in rice and coconuts went out in the form of annual tribute given by the landlord to his district chief. The chief in turn gave tribute to the king and in addition rendered succession fees and gifts at life-crisis rites (Logan, 1951, II: ccxviii–ccxix; Ayyar, 1938: 270).

A large part of the king's revenue, however, came from taxes on overseas trade. Before 1500 the trade was in the hands of Arab merchants, who obtained pepper and other spices from inland land-

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lords and tenants through indigenous Muslim middlemen. At that time the middlemen appear to have paid the villagers directly in cloth, metals, and luxury goods. Sumptuary laws confined the use of many imported goods to Brahmans, Nayars, and merchants. Other strategic goods such as metals and cloth filtered down from the landlords and tenants to the lower castes in the form of customary gifts at festivals.

During the period of European trade (1500 to 1792) markets and cash transactions encroached further upon the subsistence economy of villages. The kings prosecuted larger and larger wars and increasingly paid their Nayar soldiers in cash, even though they continued to muster them through the Nayars' "feudal lords." [8] As the pepper and coconut trade increased, new gardens came under cultivation and landlords and tenants often sold their spices for cash. The Nayar retainers seem to have received most of this cash from the towns, for as tenants they held the bulk of the village's garden lands as well as receiving their payments in war. From about 1550, therefore, landlords, who wished to maintain control of the economy, had to develop some means of extracting money from their tenants. Cash payments thus became a regular feature of the *kānam* tenure (Logan, 1951, I: cxxxi). The tenant periodically advanced a cash sum to the landlord as a kind of forced loan, the interest on which was then set off against the annual payment in kind. At the death of either landlord or tenant 13 per cent of the original sum was deducted from the loan as a succession fee. The tenant might then repay this amount in cash or revert to paying a larger share in kind. Later in the period cash renewal fees seem to have been exacted by landlords every twelve years. In some cases the tenant would prefer to surrender his land or to sell his right and move his family to another village. Sales of landlord rights, even (near the ports) to Europeans or Muslims, also increased. However, sale of either landlord or tenant rights remained disreputable, lengthy, and hedged about with legal restrictions until after the collapse of native rule (K. P. P. Menon, 1929: 309–310; Logan, 1951, I: 597 *et seq.*; II: cxxxv).

[8] I use the term "feudal" here without precise definition. In many respects the political structure of the Central kingdoms was comparable with that of the stronger Western European principalities such as Flanders and Normandy in the second half of the eleventh century. There was centralized control of the judiciary, of armies, trade, and coinage, but within each principality subordinate lords retained minor judicial powers and owned domains and private armies (Stephenson, 1942: 80–92).

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European trade shook the foundations of the caste system in other ways. Ports grew larger, and within them European merchants employed Christian converts, artisans, and runaway serfs. Near the ports, serfs sometimes became slaves, being torn from their ancestral lands and sold or hired for cash.

Nevertheless, until the introduction of steam power in the second half of the nineteenth century, the technology and over-all economy of Kerala did not change very radically. Trade was still limited to surplus crops, luxury goods, and metals. Inland villages remained largely self-sufficient, with the lower castes excluded from cash transactions. Upward mobility was virtually confined to Muslims, Christians, and the Hindu aristocrats above the rank of Nayar retainers. It seems to have been this lack of basic change in the technology which allowed the persistence of a strict, hereditary rank order in villages and, within each homogeneous local caste group, of kinship as the main organizing principle.

War and Law

The traditional period was one of perpetual wars between adjacent kingdoms, interrupted only in the rainy seasons. A royal lineage's strength lay in its monopoly of gunpowder, coinage, and customs dues, its ability to use foreign and Muslim ships for naval warfare, and its control of the royal domains both as a source of produce and of Nayar retainers as soldiers. Through its superior wealth and military power a royal lineage could force feudatory princes and vassal nobles to muster soldiers throughout the kingdom in periods of large-scale war. Each district and each village was classified according to the number of Nayar soldiers it could customarily muster for war. In the Zamorin's kingdom the strength of royal feudatories varied between 18,000 and 1,000 Nayars; of Nayar chiefs, between 5,000 and 100; of village headmen, between about 100 and 25 (Ayyar, 1938: 278). Records of the muster of each feudatory were kept by the Nayar clerks of the palace. The primary duty of each chief was to assemble regularly the soldiers of his district for military exercises at the capital, and in time of war to lead them to battle, with the king himself at their head. Within the district military training was organized on a village basis. This might be done by a Nayar village headman, by the chief himself, or, in Brahman villages, by a Nayar military leader (Asan) who acted for the chief or the king. All Nayar boys of the retainer, village headmen, and chiefly and royal

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castes seem to have received a military training, although some, especially of the Agattu Charna caste, later became clerks (Dames, 1921: 18–19; A. Gray, 1887, I: 412–413).

The Nayars' traditional arms were the sword, shield, lance, and the bow and arrow, although gunpowder came into increasing use after the Portuguese arrived. Before 1500 battles were highly stylized (cf. C. A. Menon, 1911: 56; Ayyar, 1938: 118, 171). Not more than 10,000 were commonly brought into the field at one time. Severe loss of life was prevented by the employment of Brahman emissaries who, if fighting became intense, might enter the field and arbitrate between the leaders. If, however, the king or a chief were slain, his personal vassals had to fight to the death or until their honor was avenged by the slaughter of a corresponding leader on the enemy side (Logan, 1951, I: 138).

Later, with the introduction of cannon and fortresses by the Europeans, battles became more frequent and devastating. The Zamorin mustered a total force of between 50,000 and 60,000 at various times in the sixteenth and seventeenth centuries against the ruler of Cochin (Ayyar, 1938: 169, 182). The kings had to rely increasingly on paying their soldiers in cash rather than on sporadic feudal levies. Permanent conquest and the control of rich lands also became a more urgent aim of the kings as the overseas trade expanded. But the Nayar techniques of fighting and their code of honor persisted until British times.

Within each kingdom, law was administered at several levels. Each local caste group had its own periodic assembly of household heads to judge crimes (which were also sins) against the caste's religious laws. These included wrongful interdining and sexual relations with members of other castes. The chief punishments were fines for the upkeep of the caste shrine and temporary ostracism. Grave offenders were excommunicated with the consent of the chief. They then became the property of either king or chief and were sold as slaves to foreign traders. In the larger castes such as Tiyyars or Pulayas the local caste group was often contained within the village. The smaller castes of village servants each had their own assemblies extending over a group of adjacent villages.

Among retainer Nayars the local caste group might comprise the Nayars of one caste within one village, within a section of a large village, or within a group of two to four adjacent small villages. This area was called a *tara* in the Calicut kingdom and a *kara* in Cochin; we shall call it a neighborhood. Its assembly was called a *tara-kūttam*

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342 tertaining friends, or sleeping when they were not visiting their wives. [343] A cowshed a few yards from the residential buildings completed the arrangements in a normal retainer homestead. In village headmen's 342 and chiefly households whose women often had Brahman husbands 556 a separate building with its own kitchen was set aside to entertain the men when they visited their wives.

[351] The buildings and outer courtyard were surrounded by a shady garden of coconut, jack, cashew, and mango trees. Chiefs and village [312] headmen had a private bathing pool with stone steps round it in their own gardens. Retainers more often bathed in the large public bathing [515] pools attached to the temples and reserved for "clean" castes of the village. Men and women bathed and swam daily on opposite sides of the pool.

351 In the southwest corner of the garden an open space was set aside 613 as the property group's cremation ground, entered only at funerals. [764] In another corner was a dense shrubbery devoted to the snake gods [776] of the group. Offerings were made there to small stone images of [782] cobras, and if real cobras appeared they were regarded as manifesta- [825] tions of these deities.

A high bamboo fence surrounded the whole establishment. It was entered through a wooden gatehouse within which armed men might 592 sit on guard in time of war.

241 *Economic Activities* The property group obtained almost all of its subsistence from garden and paddy lands held on tenure from the 427 village landlord and cultivated by Tiyyar sub-tenants or by Pulaya 613 serfs. The property group surrendered part of its produce in kind as 433 dues to the landlord. It retained part for maintenance, stored part for repayment to its serfs as daily subsistence, and gave portions twice annually to the village servant households. Tiyyar tenants retained enough for their own needs, but gave the bulk of their produce to their Nayar masters. Increasingly during the period of European trade [439] the property group also sold spices and coconuts to Muslim middle- [432] men in exchange for cash or cloth. The cash was used to buy brass and silver vessels, gold ornaments and jewelry, and other luxury goods [431] from the towns. The property group gave some cloth to its serfs and tenants at festivals once a year.

613 The kāranavan managed all these transactions and controlled the 592 group's estate. He might allocate specific tasks of management to juniors, but no payment was made on behalf of the group, no crops [465] were sold, and no goods were consumed without his consent. Junior men serving in the king's wars received small daily cash sums on an

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Nayar: North Kerala

The Nayars of North Kerala live between the Chandragiri and the Kora rivers. This area lay north of the Calicut kingdom and had been conquered by the Kolattiri kings at some period before the fourteenth century (Logan, 1951, I: 283; Innes, 1908: 57). It then disintegrated into the small kingdoms of Kolattunad, Kottayam, and Kadattunad. North Kerala was invaded from the Bednur kingdom of South Canara in the 1730's. It was later occupied by Muslim armies from Mysore between 1766 and 1792, after which it passed under British rule (Logan, 1951, I: 360, 399–473). This account deals with conditions before 1760, so far as these are known, and with the major changes of the nineteenth century.

Ecology

The mountains approach nearer to the sea in North Kerala than in Central Kerala. There are fewer stretches of lowland suitable for wet-rice cultivation, and gardens of fruits, nuts, vegetables, and spices on hillsides are more extensive. Since rice was the main subsistence crop, population density was lower than in Central Kerala. The houses of a village (*dēsam*) were scattered in gardens on hillsides surrounding a wet-rice flat in a valley. Villages were often separated by three to six miles of uncultivated scrub or jungle. Until the Mysoreans built roads after the 1760's, transport and communication by narrow mountain paths were difficult, especially in the heavy monsoons.

North Kerala had four major ports during the period of European trade—Cannanore, Tellicherry, Mahé, and Badagara (Hamilton, ed. 1727: 369–371). Pepper and other spices were exported from inland villages probably from Roman times, but villages were virtually self-sufficient for food until the mid-eighteenth century. After that time the Mysoreans' roads permitted greater import of goods both from the coast and from Mysore, and greater spatial mobility. In the nineteenth century cash-crop farming for export increased, as did imports of

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439 food and other goods. The population expanded and much formerly
[161] waste land was brought under cultivation as gardens for the produc-
[241] tion of coconuts, pepper, cashew nuts, and cinnamon. Higher in the
[464] mountains Europeans developed estates of tea, coffee, and spices,
[496] which attracted wage labor from villages to the west. The develop-
ment of the steamship, the opening of the Suez Canal in 1869, and
the entry of railways into Kerala in the 1860's were significant events
in this process.

564 **Political and Economic Systems**

[566] Traditionally, a hierarchy of the major Hindu castes was present as
in Central Kerala, except that large areas of North Kerala had no
Pulayas or agricultural serfs (*ibid.*, I: 148). Nambudiri Brahmans
were fewer than in Central Kerala, but they controlled a small num-
ber of temple estates and claimed religious superiority over the Nayar
439 rulers. Muslims were the dominant trading population of the ports
563 and inland trading centers.

631 The mountainous terrain, heavy rainfall, poor communications,
sparse population, and comparatively low productivity made politi-
cal centralization more difficult than in Central Kerala. The ancient
Kolattiri kingdom was divided into chiefdoms and villages in a man-
ner similar to the later kingdom of the Zamorin, but judicial con-
trol was perhaps never as well centralized as in the Calicut kingdom.
175 From the fourteenth century, when the Zamorins captured most of
635 the Arab trade, the Kolattiri kingship lost some of its former power.
[634] The kingdom disintegrated into three smaller, virtually independent
kingdoms—Kolattunad, Kottayam, and Kadattunad—plus a number
of small border chiefdoms of uncertain allegiance (*ibid.*, I: 343–344).
174 Each of the three North Kerala kingdoms probably had a population
161 of between 150,000 and 250,000, in contrast to the Calicut kingdom,
635 which seems to have numbered some 600,000 to 720,000 (see note
5, page 473).

175 After 1500 each of the North Kerala rulers sought the help of one
648 or another of the mutually hostile European and Middle Eastern trad-
634 ing powers, thus maintaining a state of fragmentation until the My-
635 sorean conquest. In the struggles of the seventeenth and eighteenth
centuries some new Nayar chiefs also arose with mushroom rapidity
on the basis of European support and gained partially autonomous
sway over small groups of villages. Political and social mobility among
Nayar aristocrats was thus more marked in North Kerala than in the
more stable central kingdoms. Indeed, a North Kerala proverb re-

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564 the Mamalukes of Egypt.[1] Camoens, the Milton of Portugal, described them in these lines :—

> "By the proud Nāyars noble rank is claimed ;
> The toils of culture and of art they scorn,
> The shining falchion brandished in the right,
> Their left arm wields the target in the fight."

175 564 701 As a matter of fact, the Nāyars as a military aristocracy have been famous ever since Marco Polo travelled in Asia.

"In this region of Malabar," says Gaspar Correa, writing on the three voyages of da Gama,[2] "the race of Gentlemen is called Nairs who are people of war. They are people who are very refined in blood and customs and separated from all other people. So much do they value themselves that no one of them ever turned a Moor."

"Of these Malabars there are two manner of people (the one is) Noblemen called Nāyars which are soldiers and do only weare and handle arms and the other is the common people called Polayas. The Nayros must [in all places] where they go or stand weare such arms as are appointed for them and alwaies be ready at the King's commandement. . . . . .

"As these Nayros go in the streets they cry po ! po ! which is to say take heed I come, stand out of the way."[3]

175 439 Historical circumstances have also had their share in the abundance of material which foreigners have left with regard to the Nāyars. Malabar was the seat of Arabic trade, and the Portuguese first landed at Calicut. During the hundred and fifty years of Portuguese power in India they had dealings mostly with the Zamorin of Calicut, the Rajah of Cochin, and the Deva Narayana, Rajah of Prakaud. That was the land from which spices came, and the Portuguese, therefore, were interested in the petty politics of these principalities. The Dutch, who followed then, also had their main interest on the mainland of India centred on Cochin, and in the first beginnings of English commerce, also, Malabar had a share. Apart from these a number of observant travellers has visited the seaboard of Malabar.

129 1:4 But though material of a kind is, therefore, abundant, it is found on closer examination to be unscientific and unreliable. The Nāyar Society of the eighteenth century, or an age previous to that, cannot be reconstructed from the observations of either Duarte Barbosa or Vinschar. An accurate and scientific description of the state of society prevalent before European contact is possible only after a thorough and searching study of Nāyar literature. Camoens' description of the Nāyars as scorning the toils of culture is not true. Malayalam has an extensive

113 [1] Had they (the French aristocracy) been like the Mamalukes of Egypt or Nāyars of the coast of Malabar. (*French Revolution*, p. 148, World's Classics.)

[2] *Voyages of Vasco da Gama*, Hakluyt Soc., vol. i, p. 185.

[3] *Voyage of Linschoten to the East Indies*, translation of 1598. Edited by Hakluyt Soc., vol. i, p. 278 *et seq.*

This is mostly due to two reasons: 434 [182] [245]
First of all, there is the joint family system which provides for all the members without distinction. Secondly, every Nāyar family lives on its own plot of ground on which coco-nut palms are grown, which bring in a small but quite comfortable sum.

The standard of life is comparatively high. Among the richer classes it is fairly decent, even according to the higher material standards of Europe, while, among the poorer clases, it never comes anywhere near the uncleanliness, the misery, the unrefined and uncultured barbarism which is the atmosphere of the slum life of the big cities of Europe. Poverty is less disreputable than in civilised communities, and the difference this makes is immense. The peculiarly civilised idea that success is the criterion of intrinsic merit, and that, consequently, failure by itself proves that it was deserved, is almost totally unheard of among the Nāyars. The fact that the individual members of a family have to pool their abilities and, to some extent, their personal incomes, prevents the sharp distinction between the rich and the poor which is so characteristic of societies organised on an individual basis. 511 [613] [182]

Food.—The Nāyars are not vegetarians. Like all Hindus, they do not eat beef, but nothing else is prohibited. Fish is a favourite article of food, and there is an old couplet which sings: 262

"*Kaiel vizhakka Kari yuntoru vaka*
Bhatu Bhojana matu Koottillā." [539]

"Then there is a kind of banana of the seas (fish)
And the Nāyars cannot live without it."

There is another couplet, which says:

"There is nothing among the various kinds of food which equals the flesh of a bear."

The Nāyars are great epicures and they cook beautifully. Rice, of course, is the staple food, but milk curds, butter and *ghee* are things of equal importance.

Most Nāyar families have three meals a day. The breakfast, among the poor people, consists of rice boiled with water in the form of a pudding. With it is taken as relishes pickles, fried fish, cooked vegetables, etc. The next meal is at noon. The main course, of course, is rice. The first part of it is eaten with butter, boiled peas, and many other relishes. The second course is fish, vegetables, etc., mixed with rice. The third part is eaten with buttermilk, mangoes, and pickles. The supper at night is also a meal of which rice is the chief part. The thing about it is that, though the main course is the same as porridge among the Scotch, the variety, as well as the taste, of the subsidiary dishes is what makes all the difference. 264 262

Clothing.—The typical Nāyar (male) clothing is the *Mundu*. This is generally 2½ yards long, 1½ yards broad, cloth of fine texture made at Eraniyal, in South Travancore. Nowadays, people wear cotton cloth from Lancashire, while the richer classes go in for Benares silk. 291 184 [439]

9:Iyer E-4, 5 (ca. 1902-1906)1912
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and one with less than that number was called a *Désavázhi*. There were in those days no taxes levied from the people, and the chief from the Rajas down to the *Désavázhi* possessed demesne lands for their support which were cultivated either by themselves or leased to *kudiyáns* or tenants; but the following were the chief sources of income, based upon feudal rights and privileges. The rulers levied custom duties upon exports and imports, taxes upon houses of fishermen, tradesmen and professional men. Criminal fines went to fill their coffers, and succession duties were levied upon the estates of deceased persons, especially those who held offices of State or rights over land. Outcast women were made a two-fold source of profit. Lewd adulterous women were made over to the chiefs with a premium for the trouble of looking after them, and the chiefs used in turn to sell the women to foreign merchants as slaves or wives to *Chettis*. The estates of persons who died without heirs were escheated, nor could an heir be adopted without the Raja's consent, for which a fee was generally levied. Protection fees from strangers and merchants were levied under various names and customary presents were the ruler's dues on occasions of feast or funeral. Wrecks were his perquisites, and various animals his monopoly. Concerning the former, Marco Polo wrote about the kingdom of Eli, "And you must know that if any ship enters the estuary and anchors when she has been bound for some other port, they seize her and plunder the cargo. They say that you are bound somewhere else, and it is God that sent you hither to us, so we have a right to all your goods, and think it no sin to act thus. This naughty custom prevails all over the Provinces of India, to wit, that if a ship be driven by a stress of weather into some other port than that to which it is bound, it is sure to be plundered. But if a ship came bound originally to the place, they received it with all honour and gave it protection."[1] The custom of the taking of ships and cargoes lasted down to recent times, until the English factory at Tellicherry entered into agreements with three of the country-powers for the exemption of English vessels from such seizures.

Among the animals that became the property of the Raja were cows with three or five dugs, cattle that has killed a man or other animals, cattle with a white spot near the corner of

1. Yulles Marco Polo, page 374.

9:Iyer E-4, 5 (ca. 1902-1906)1912
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184 come off, therefore, either in the latter part of Kumbham or in the former part of the next following month of Meenam according as the new moon in Kumbham occurs earlier or
796 later. The festival is said to be celebrated in commemora-
184 tion of the victory obtained by the local deity, Bhadrakali,
773 widely known by the local designation of Chittur Bhagavati,
776 in a battle fought with the Kongans, the people of what was known in ancient days as the 'Kongu Desam' comprising the localities included in the present British District of Coimbatore, and lying to the north and east of the Chittur Taluk. The final engagement was fought in the eastern out-skirts of the present town of Chittur, and in it the Kongu chief called in the old songs by the simple name of 'Kongan' was slain by the Goddess with her own hand. The place of engagement is now marked by a small extent of rocky surface, on which is cut the figure of the Bhagavati's sword with which Kongan's head was cut off. The rock also shows two holes nearly a foot in depth, and six inches in diameter. These holes are pointed out by old people as having been made by the hoofs of the fore-legs of the Kongan's mount, which is described as a magnificent buff-bull, when the animal jumped on to the rock in the excitement caused by the fall of its master from its back slain by the Goddess. The buff-bull was also slain on the spot. The whole of the Kongu army was completely routed, and all stampeded to their country in utter confusion. In the course of the battle a few men on the side of the Bhagavati were also killed or wounded, among whom were four important persons belonging to four ancient families in Chittur, who appear to have been the leaders of the local militia. The dead bodies of these four and the wounded were taken from the field of battle and carried to the town and handed over to the respective families, the procession being led by the Goddess, who afterwards commanded the people to celebrate the victory every year, and after
173 entering the temple disappeared into her image within. Tra-
796 dition speaks thus of the origin of the war. The wealth of the
184 'Kongu Desom' chiefly consisted of chillies, turmeric, coriander, cumin seed, mustard, areca nut, etc. These commodities
[439] used to be exported for sale, in return for paddy, from Kongu
[492] Desom to Chittur, Palghat, and other places in large quantities

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laden on the backs of mules, asses, bullocks and buffaloes. 796
When once a large caravansary of Kongu laden with such com- 184
modities was passing through Chittur, the people of the four [439]
desams of Chittur, *viz.*, Chittur, Nallepilli, Tattamangalam, [492]
and Pattancheri, robbed the Kongans of all their animals and goods. The chief of Kongu, on receiving the information, naturally felt indignant, and despatched an ultimatum to the *Pramánakkars* of Chittur, demanding the surrender of the animals and the articles, failing which, it was said, he would overrun the four *desams*, destroy the houses, and kill all people even including women and children. On receiving the ultimatum, the people went to the temple of the Goddess, and there read the document before the image of the Goddess. It was so read by a member of the Chittedath house, in whose custody, it is said, the original document, written in a copper plate, is still preserved. The reading of the ultimatum, transcribed in a piece of cadjan, before the Bhagavati, is one of the essential functions performed on the night of the Kongapada festival every year, and it is always done by a member of the Chittedath family, who dresses himself up in the fashion of a Kongan and acts the part of the Kongu chief. When the document [776]
was read and the people prayed to their Goddess in one voice for protection, the Goddess commanded from within the temple that her 'children' need not fear and that when the Kongan took steps to enforce his ultimatum, she would protect them. On receiving no reply to the ultimatum, the Kongan mobilized his men and crossed the Walayar river, the northern boundary of the Chittur Taluk. The information about the crossing of the [314]
boundary was first carried to the Chitturians by the Izhuvans [273]
of the vicinity, who were up the palmyra trees early in the morning for the purpose of tapping for toddy, and they in a body climbed down the trees, and without removing their breast protecting leather straps, tapping knives, mallets and ladders, ran to the four *desams* all in excitement. In view [564]
of the above fact, the advance portion of the day procession of the Kongapada festival is even to this day made up of a number of persons, mostly of the Chetti caste, belonging to the four *desams*, dressed up in the full toddy-tapping kit of the Izhuvans. They do so every year in pursuance of religi- [782]
ous vows made by them for the attainment of particular

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*433 375 tion and foreign exchange requirements. Besides, the construction of a thermal station even if immediately taken up, cannot be completed before two to three years. This time lag considerably reduces its value for alleviating the immediate problem of power shortage. Under such circumstances, there is no case at all for considering any thermal power stations in Kerala.

*433 377 7.44 At present, the best solution would be to arrange for the staggering of power load and to encourage the working of industries during the off-peak hours. Another possibility is that the Governments of Kerala and Madras may get together to alleviate the power problem of Kerala to whatever extent it is possible through the zonal grid.

INVESTMENT REQUIREMENTS

7.45 Kerala's installed capacity by the end of the Second Plan was 147.5 MW. To build it up to 400 MW by the end of the Third Plan as suggested in this report an additional installed capacity of roughly 250 MW will be necessary. According to current estimates, approximately Rs. 1,600 per kW will be required in Kerala for generation, transmission and distribution. On this basis, about Rs. 40 crores will be required during the Third Plan. During the Fourth Plan, installed capacity is envisaged to increase from 400 MW to 800 MW. At the same rate of investment per kW as mentioned above, investment requirements for the Fourth Plan would be about Rs. 64 crores. Thus Kerala State would require the sum of about Rs. 104 crores over the Third and Fourth Plan periods to satisfy its own power needs. Requirements of neighbouring States for Kerala's power would require additional investment over and above this figure.

CONCLUSIONS

7.46 The abundant water resources of the State, which can be utilized for generation of hydro-electric energy, form one of the strong points of Kerala economy. Apart from the large hydro-electric potential which is estimated to be of the order of 1,589 MW, the important feature of power resources of Kerala is the low cost of generation per unit. This is due to the favourable nature of the terrain and the high degree of rainfall which Kerala receives.

7.47 In the absence of any coal or oil deposits in Kerala or in nearby regions, hydro-electric power has to be the chief source of energy requirements of industry. The favourable position of Kerala in this respect should be utilized as a factor helping industrialization. For this purpose harnessing of the hydro-electric potential should be properly planned in advance so that an adequate amount of well-assured electric supply could be guaranteed to the industrialists. In this context the State would be well-advised to plan for a power surplus.

● [439] 7.48 In view of the fact that Kerala is in a position to generate electric energy in excess of its requirements, while the neighbouring State of Madras has almost exhausted its domestic resources and Mysore and Andhra are just on the verge of self-

for the most acute problem of Kerala, viz., abnormally high rate of unemployment. According to a survey carried out by the State Statistics Department open unemployment in the State was as high as 4.2 per cent (all-India 0.6%) and under-employment 9.6 per cent of the total population (all-India 6.0%).

The unemployment problem of Kerala might not have been so severe had there been a correspondingly rapid development of industries over the past few decades. In this sphere the State suffers from certain handicaps. Although the industrial sector in Kerala absorbs a high proportion of the working force (Kerala 19.1%; India 9.4%), the majority of them are engaged in very low productivity industries. The two major industries of Kerala, viz., coir and cashewnut are technologically very backward. Coir industry, which is organized as a cottage industry, absorbs 4-5 lakh persons. Cashewnut-processing, although organized on the lines of factory industry, is almost entirely unmechanized. As a result, labour productivity in the secondary sector is extremely low. Because of this, industrial sector in Kerala does not create any sizeable reinvestible surplus and the process of capital formation is hampered. The types of industries in which Kerala predominates, have not also aided the development of entrepreneurial talents. Kerala lacks in a long tradition of industrial enterprise. Most of the large scale industries which now exist in Kerala, for example, Fertilizers & Chemicals Travancore Ltd., Travancore-Cochin Chemicals Ltd., Indian Aluminium Company and Aluminium Industries Ltd., were started under the direct initiative of the governments of the erstwhile States of Travancore and Cochin or industrialists from other neighbouring States of India. No distinct body of local entrepreneurship has, therefore, developed in the State.

In addition, lack of sizable mineral deposits (except Ilmenite) adds to the difficulties which have been retarding industrial development of the State. Coal as well as all metallic raw materials for the industries of Kerala have to be transported over long distances from other parts of the country. But there are favourable factors compensating some of these deficiencies in the economic endowments of the State. The agricultural sector of Kerala abounds in a rich variety of high value yielding cash crops like coconut, pepper, rubber, arecanut, tea, cashewnut, cardamom and coffee. These crops not only provide considerable incomes for the farmers, but are a good source of foreign exchange earnings and provide valuable raw materials for the industries. A vast potential for generation of low-cost hydro-electric power makes up for the absence of fossil fuels. Rich forest and fishery resources, a highly intelligent and literate labour force, easy accessibility to most parts of the State through a wide network of roadways, and the scenic beauty of its landscape capable of attracting tourists, are some of the other assets of Kerala.

As a result of the present survey, several lines of technically and economically feasible developments have been suggested in this report in the industrial and other fields. The total impact of these developments would be to raise the per capita income of the State from the present level of Rs. 240 (at 1955-56 prices) to Rs. 404 (at the same price level) by 1970-71. State income would rise from Rs. 400 crores (at 1955-56 prices) to Rs. 812.8 crores, i.e., at an average annual rate of 10.3 per cent. The targets are undoubtedly on the high side, but the needs of Kerala in the context of its huge unemployment and very low per capita income demand a rather high

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50 per cent higher than at the all-India level. Agricultural crops and the plantations, which form the main component of the primary sector, are largely produced for the market and are the basic factors responsible for imparting a high level of productivity to this sector.

1.26 Agriculture in the State is characterized by a high value yielding cropping pattern, good physical yields, a high intensity of cropping and superior cultivation techniques. During 1956-57 the intensity of cropping[1] was 119 per cent (all-India—113%). However, if field crops alone are taken into account, the cropping intensity shoots up to 150 per cent. It is the latter percentage which is the more relevant one, since the area covered by the perennial crops is irrelevant from the point of view of double or triple cropping. All these factors combine to make the agricultural sector of Kerala highly productive, the average level of agricultural output per net cultivated acre in Kerala being about Rs. 360 against Rs. 125 for the whole of India.

1.27 Kerala owes the superiority of its cropping pattern to the large number of high value yielding plantation crops grown in the State. Coconuts, the most important among these, occupy about 20 per cent of the gross cropped area and yield Rs. 450 per acre on an average. Other cash crops in the order of their importance in terms of area covered are pepper, rubber, arecanut, tea, cashewnut, cardamom, and coffee. Taken as a whole, they cover approximately 40 per cent of the gross cropped area.

1.28 Apart from the high productivity aspect of the plantation crops, they are of significance to the economy from two other angles. First, these crops provide the raw material for some of the key industries of the State. Coir making, the most important industry of the State, utilizes the outer husks of the coconuts. Similarly, cashewnut industry, the second most important industry of Kerala, also draws its raw material from the agricultural sector. Besides these, Kerala holds almost a complete all-India monopoly in the production of rubber, which is another important industrial raw material. Secondly, plantation crops derive their prominence from the fact that a large number of crops grown in Kerala find a good export market and are, therefore, very good foreign exchange earners.

1.29 One other feature of the Kerala economy which owes its origin to the agricultural sector may also be pointed out. Unlike the rest of India, where barter trade is still prevalent on a significant scale in the rural areas, Kerala economy is highly monetized. The large number of cash crops grown in the State are all brought to the market for sale. Secondly, since a high percentage of food requirements are obtained from the other parts of India, they are again channelled through the market. A high degree of commercialization of Kerala economy is one of the factors responsible for absorption of a large section of the population in the tertiary sector.

1.30 Otherwise agriculture in Kerala carries with it all the disquieting features common to Indian agriculture. The pressure of population on land is even severer here. The average size of holdings in Kerala has dwindled down to 1.5 acres

[1] Intensity of cropping is the ratio between gross cropped area and net sown area. It gives the degree to which a given piece of land is utilised.

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and milk products in the State as a result of which people have to lean more heavily on fish and tapioca.

1.36 Among the items of non-food expenditure the significant point is the higher percentage of expenditure devoted to clothing. The neatness and cleanliness of dress worn by the people of Kerala is evident even to a casual visitor to the State.

The Food Gap

1.37 The superior cropping pattern has also brought with it a huge food deficit. In this, Kerala leads all the other States. The current production of foodgrains is estimated at 9.6 lakh tons, whereas requirements on the basis of a norm of 17 ozs. per day would come to about 24 lakh tons, leaving a gap of nearly 14.6 lakh tons. The width of this gap is only partially closed by the consumption of tapioca as part of the diet by poorer sections of the people, although it does form an important second line of defence in the lean years as in 1940's when there was a severe food shortage.

1.38 Wide as the food gap in Kerala is, it has often led to the formulation of solutions which, if given effect to, would be retarding the operation of inherent growth factors in the Kerala economy. Every economy may present some "growth leaders", and development consists in stimulating and invigorating them. The climate and physical formation of Kerala favour the growth of a large number of valuable cash crops. It is this sector to which maximum attention should be devoted. Kerala is better suited to serve the role of an exchange economy which relies for its food requirements on the other parts of India and in return contributes to the economic development of the country by earning valuable foreign exchange through the export of raw and semi-processed commodities.

Other Primary Activities

1.39 Of the other three primary activities, viz., animal husbandry, forestry and fisheries, the former, that is, livestock is rather poorly developed. Due to the poor breed, and the natural deficiency in the livestock feed, the cattle is of poor quality with milk yields much lower than the all-India level. The only exception to this is poultry. Kerala can claim to have the best developed commercial poultry in India, the eggs produced in Kerala going even as far north as Punjab. However, in view of under-feeding and the poor conditions under which the birds are reared, there is still a lot of unexploited potential in poultry development.

1.40 Forestry and fishery are the two other sectors which hold an important place in the economy of Kerala. The forests in the State are rich in some of the valuable species like teak and rosewood. As a result of forest management on scientific lines and the high quality of forest growth, their yield per acre in Kerala during 1955-56 was as high as Rs. 18 against the all-India average of Rs. 5.6. This sector is crucial as a source of supply of industrial raw materials.

1.41 Kerala ranks foremost among the fish-producing States of India. In 1957 total fish landings in Kerala were 3.41 lakh tons. With only 10 per cent of the all-

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Imports and Exports

439 1.53 Reference has already been made to the fact that Kerala is very much of an exchange economy. On the one hand it has to import a substantial part of its foodgrain requirements from the other parts of India. No exact estimates of total import of foodgrains into the State are available. The total amount of rice arriving in Kerala by train was 3.8 lakh tons during 1958 and 4.8 lakh tons during 1959.[1] This does not, however, include imports by roads or by the sea. In addition to foodgrains, almost all the industrial raw materials like coal, alumina, iron and steel, salt, etc., are obtained from the other parts of India.

1.54 On the other hand, Kerala also contributes substantially to India's export trade. As may be seen from Table 6, the total value of goods exported from the ports of Kerala to the other parts of the world is roughly Rs. 55 crores per annum, but the figure has been rising over the last few years. This is quite a substantial amount, being about 10 per cent of the overall foreign exchange earnings of India. Since this State occupies only 1.2 per cent of the total area of India, in relation to its area it may be claimed to be eight to nine times more productive in terms of its foreign exchange earnings than the whole of India.

1.55 The main export commodities of Kerala are listed in Table 6. It will be seen that the three major items which contribute about 75 per cent of total foreign exchange earnings of Kerala are tea, cashewnuts and coir and coir products. Except for fish, prawns and ilmenite, all other exportable commodities originate in the agricultural sector.

439 198 1.56 Whereas exports of most of the commodities have been rising, the trend in the case of coir, pepper and ginger has not been a promising one. Of these three commodities, pepper shows the most serious decline in foreign exchange earnings. In physical quantity the export of pepper has not declined much. It was 3,3 lakh cwts. in 1951-52 and 3.2 lakh cwts. in 1958-59. The decline in foreign exchange earnings from the export of pepper has been due to a drastic fall in the world price of pepper. The crash in prices has, in turn, been primarily due to a large increase in the production of pepper in other competing countries like Indonesia, Sarawak and Malaya. Similarly, in case of ginger and coir products no preceptible rise in exports has taken place due to competitive pressure in the foreign markets.

Unemployment

464 1.57 According to the Census of 1951, Kerala had a working force[2] of 4.54 million persons out of a total population of 15 million, giving a participation ratio (i.e., working force divided by total population) of 33.5 per cent. Since a participation rate of the order of 33.5 per cent is one of the lowest in the whole of India, it gives a fair indication of the very high degree of unemployment prevalent in Kerala. A low participation rate reflects the lack of adequate opportunities for gainful employment. These conclusions are borne out by the results of an unemployment

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[1] *Economic Review of Kerala*, 1959: Government of Kerala.

[2] Working Force is equal to the sum of earning dependents and self-supporting persons. For a detailed note see Appendix 3.

3 [see p. 273, category 116 -- Analyst]

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intensity of cropping since the area covered by perennial crops, which is quite large in the case of Kerala, is irrelevant from the point of view of double or triple cropping. It will thus be seen that not only is the proportion of cultivable area to total area high in Kerala, but the degree of utilization of the cultivated area is also quite high.

FIELD CROPS

2.12 The techniques of cultivation as well as the economics of field crops differ widely from that of commercial plantation crops. The field crops are generally characteristic of the subsistence economy whereas the latter are largely market-oriented. Moreover, unlike field crops the plantation crops are perennial and do not require annual repetition of preliminary agricultural operations like ploughing, sowing, etc. The returns too vary widely. Field crops and plantations are, therefore, discussed separately in the pages that follow.

Cropping Pattern and Yields of Field Crops

2.13 Rice, the most important field crop, occupies a prominent place in the agricultural economy of Kerala. In 1958-59, it covered 1.9 million acres out of 2.7 million acres under field crops. The production of rice in the same year was 939,000 tons. While the rice acreage fell by only 0.4 per cent during 1951–59, its production during the same period leapt up by over 31 per cent. Increase in the yield rate during the same period was from 829 to 1,108 lbs. per acre (Table 11).[1] The growing appreciation among farmers of the utility of fertilizers, improved seeds and better techniques of cultivation is largely responsible for this steady improvement.

2.14 Next to rice, tapioca is the most important field crop of Kerala. During 1951–59, the area under the crop increased from 506,000 acres to 553,000 acres, that is by 11 per cent. The production of tapioca in 1958-59 was 1.5 million tons, that is, an increase of 4.6 per cent over 1950-51.

2.15 Tapioca and rice considered together, account for over 54 per cent of the net sown area which is the same as 90 per cent of the area under field crops. Among the remaining field crops, ginger, groundnut, sesamum, sugarcane and pulses are the most important ones. Ginger is primarily an export crop, and its fortunes fluctuate with the trend of foreign markets. During the recent years, the area under ginger has steadily declined from 30,000 acres in 1950-51 to 22,000 acres in 1958-59. Other field crops, however, have shown significant increases in area over the same period. The rate of increase is the highest for sugarcane, where it rose from mere 2,000 to 22,000 acres—an increase of 1,000 per cent in less than a decade. This is due to the commissioning of a sugar factory (900 tons crushing capacity per day) at Thiruvella in 1954. The output of sugarcane, however, rose by only 775 per cent. The next highest increase has been in pulses where the area rose by 287 per cent between 1951 and 1959. Pulses, with the exception of *tur* (*Cajanus indica*), are now increasingly raised as second or even third crop by availing of the moisture left in the soil after the harvest of paddy. This development owes

[1] [see p. 277, category 116 — Analyst]

[text continues on p. 28]

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ensure a better return to the farmer. This creates an incentive for achieving a still higher level of production. And at the same time, the rise in agricultural income provides a substantial purchasing power for absorbing consumer goods output of the industrial sector. The need for an emphasis on agricultural development is, therefore, very much inter-related with steady industrial growth.

2.22 Agricultural development in Kerala can follow two possible directions. First, the aim could be to raise the yield rate and output of the existing crops with a special emphasis on increasing the food production. Alternatively, the policy could be directed towards bringing about a modification in the existing cropping pattern by giving greater weightage to the commercial crops and thus ensuring better returns from the land. On the basis of available evidence; it seems that for Kerala the latter course of action would be the more appropriate one. It has already been pointed out that it is not necessary for each State to try to achieve, complete self-sufficiency in foodgrains.

2.23. A wide gap in food requirements of the extent which exists at present in the State, can be covered only through extension of area under paddy in addition to increase in the yield per acre. Whereas efforts at raising the yield rate are justified by all means, it would be unwise to divert land from commercial crops to the cultivation of paddy. Apart from direct importance of cash crops to the industrial growth of Kerala in the form of raw material supply, commercial crops make a substantial contribution to the industrial effort of India through the large amount of foreign exchange earnings they bring in annually. Export of commodities like tea, pepper, cardamom, cashewnut and coconut products from Kerala earn foreign exchange to the tune of Rs. 55 crores every year—roughly one-twelfth of overall foreign exchange earnings of the entire country. It would, therefore, be in the interest of the State economy to maximize returns from land by growing higher value crops in place of low value crops like tapioca and small millets in as much area as possible. This would require a reversal of the policy pursued so far in favour of attaining self-sufficiency in food within the State. The gap in food requirements which cannot be covered through intensive measures of paddy cultivation could continue to be met by imports from the other parts of India. Since the relative advantage lies in the cultivation of commercial crops, some of which can be grown only in Kerala, attention should be focussed on the development of cash crops whereas the problem of wiping out the food deficit can be relegated to a secondary place for the present.

2.24 The extension of the area under commercial crops should be undertaken on a scientific and planned basis. Considerations such as gross value of product per unit area and demand for the crop and suitability of soil are some of the important aspects that have to be examined in this connection. It is not possible to state the exact extent and nature of substitution without an intensive land use potential survey of different regions. A survey of this type was being carried out by the State Agriculture Department. However, the future scope for some of commercial field crops is analysed below on the basis of whatever information is available. The possibilities of commercial plantation crops are discussed in the last part of this chapter.

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ginger should be stepped up. The proposed phyto-chemical plant at Munnar would also consume large quantities of raw ginger. The area under ginger cultivation can be extended by 20,000 acres and attempts should be made to raise productivity to one ton per acre through better cultivation techniques, seed selection and use of higher dosage of fertilizers. The likely annual increase in output from these measures is expected to be of the order of 33,000 tons in terms of dry ginger.

Oilseeds

2.33 Oilseeds, other than coconut, account for only a very small proportion of the cropped area, but there is scope for raising the yields and extending the area under these crops as a substitute crop in tapioca fields and in young coconut gardens. In addition, castor cultivation may be introduced in the State along field borders which are considerably wide on the banks of rivers and streams and on the borders of gardens and plantations. Assuming that the measures for increased production are reasonably well implemented, the additional production of edible oilseeds by 1971 would be of the order of 20,000 tons annually.

Banana

2.34 Since bananas need frequent irrigation, cultivation of this crop is quite popular in Kerala, especially on the banks of the rivers and near other sources of water. In view of the very high calorific value of bananas as well as good future demand prospects, the production of bananas should be increased. It is not possible to give an exact idea of the extent to which the area under this crop can be increased but there is scope for growing the crop more intensively in compounds attached to residential houses and in areas which receive the benefits of perennial irrigation.

Pineapple

2.35 There is quite a large demand for pineapples from Kerala, as they are good both in size and in quality. Location of a few additional canning units in the State is likely to add further to the demand. Steps should, therefore, be taken to increase pineapple production. There is scope for fresh plantings in the hilly slopes of Malabar, which at present contain only wild growth.

Lemon Grass

2.36 Lemon grass owes its importance to lemon grass oil which is extracted from the grass. Kerala produces over 88 per cent of the world output of lemon grass oil, most of which is exported. It is a good foreign exchange earner. The output of lemon grass oil has been increasing year after year in spite of unsteady and fluctuating market conditions. From a mere nine tons in 1920, the output rose to 1,400 tons in 1957.

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2.85 The country is deficit in the output of coconuts and annually imports about Rs. 15 crores worth of copra and coconut products. This is a heavy drain on foreign exchange resources of the country. Even after imports the total available supply of coconuts is not enough and the oil millers are, therefore, hard hit by this shortage. The demand for this commodity is increasing year after year while the production has been more or less stagnant at 3,100 million nuts. If this situation is allowed to drift unchecked, imports of coconuts will have to be increased progressively. In view of these factors, measures to increase productivity and the output of coconut are of extreme urgency.

2.86 Coconut cultivation in the State today faces a multitude of problems. The average yields are only about 40 nuts a tree per annum, that is, 3,000 nuts an acre, as against 60 to 100 nuts per tree in Philippines and some of the other Far Eastern countries. Moreover, the yield has shown no tendency to increase over the last 10 years. The focal point of coconut development programme, therefore, should be to break through the stagnant levels of productivity of coconut. The following discussion follows this line of argument.

2.87 Poor yields are largely due to the absence of regular and adequate manuring. The crop needs large quantities of manure. But the farmers, majority of whom are poor, cannot afford to spend on fertilizers which in the case of coconuts show results only after two or three years. Farmers, therefore, prefer to invest whatever resources they have in manuring the field crops which bring in quicker returns. Coconuts thus get neglected. In addition to starving the coconut trees of fertilizers, many farmers grow exhaustive crops such as banana and tapioca as an understorey. This practice exhausts the soil and it needs large funds and a long period ranging from 3 to 5 years, to rehabilitate such gardens.

2.88 To raise the yields, an intensive application of fertilizers containing NPK has been recommended by the Indian Central Coconut Committee. The Committee is of the opinion that fertilizers are more suited to acidic soils on which coconut is generally grown in Kerala. It estimates the cost of requisite fertilizers to be of the order of Rs. 93 per acre per annum but that is beyond the means of a small farmer. It is, therefore, suggested that the State should arrange to advance loans for the purchase of fertilizers, and these loans may be recovered after three years. To start with, 30 per cent of the area may be brought under this programme. The annual requirement of fertilizers would be about 26,000 tons of superphosphate. The programme would cost Rs. 3 crores per year, that is, Rs. 9 crores for the first three years after which the loans may be granted out of the recoveries. The programme may be extended to cover 75 per cent of the area earmarked for coconut during the Fourth Plan. Better manuring coupled with the necessary cultural operations, can raise the yields from 40 nuts to 60 or 70 nuts per tree which would thus amount to an increase of 50 to 75 per cent over the present rate of production.

2.89 Coconut crop is subject to a heavy incidence of diseases and pests. The diseases such as "leaf rot" and "root diseases" are rampant and widespread and have spread to six districts affecting over 50 per cent of the trees in the State. The annual loss of production due to these diseases is estimated at Rs. 2 to 3 crores. There is already a scheme in force to spray about 7 million trees in the infected pockets.

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Tea

2.94 Tea is foremost among the exports of Kerala and the second most important cash crop of the State in terms of net value contributed. It also employs the largest number of persons among the plantation crops. In 1957-58, out of the total exports worth Rs. 56 crores from the ports of Kerala, tea alone accounted for Rs. 24.3 crores.

2.95 The growth of tea plant is very much influenced by natural factors such as temperature and rainfall. A warm and moist climate with a temperature range of 55°-95°F, and an aggregate of 100 to 250 inches of well distributed rainfall are ideal conditions for the growth of tea bushes. It is grown at altitudes of over 2,000 feet above sea level and requires a well drained soil for anchorage and share of trees. The Wynad range (3,000 ft. elevation) of Malabar and Kannan Devan Hills (5,000 ft. elevation) of Travancore-Cochin area possess all these attributes.

2.96 Between 1951 and 1958 the area under tea in the State increased from 93,000 to 97,000 acres, that is, by 5.4 per cent. On the output side, the production of tea in the State during 1958 was 80.0 million lbs. as against 66.4 million lbs. in 1951, registering an increase of 35 per cent. The increase in production has thus been largely due to increase in yields between 1951 and 1958. By 1958 the yield rate reached a record level of 957 lbs. per acre. This increase has been steady and is higher than the corresponding all-India rise. However, even at present the average yield per acre in Kerala is lower than that in the case of other principal tea growing States of India such as Assam, West Bengal and Madras.

2.97 Higher prices and increased demand after the last world war gave an inducement to the planters to adopt intensive techniques of cultivation such as application of large dosage of fertilizers, better management and care. These have been primarily responsible for a larger outturn per acre. However, this trend is not likely to continue indefinitely as the bushes are getting aged. Experienced planters feel that with further improvements in cultivation techniques and increased application of fertilizer mixtures, it would be possible to raise the average yield to 1,000 lbs. per acre.

2.98 *Replantation*: The economic life of a tea bush ranges from 40 to 60 years and this makes it necessary to have a planned programme of replantation. Nearly half of the tea acreage in South India was planted during the early part of the century using Assam seeds. The remainder is the old China hybrid. Till 1953 only 0.72 per cent of the tea area had been replanted.

2.99 Replanting of tea had been neglected till recently. Most of the plantation estates were distributing the major part of their profits and there was very little ploughing back. The need for replanting on an appreciable scale received recognition only about 10 years ago but the situation has not improved still. Since no profits had been ploughed back to build up reserves, absence of replantation is largely explained by the lack of financial resources with the planters. Government aid in the form of long term loans for plantation, therefore, seems to be the only solution. The Plantation Enquiry Committee examined this problem in detail and recommended the creation of a fund for replantation. No action seems to have been taken so far.

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per cent of over 200,000 acres planted from 1902 onwards belonged to non-selected and low yielding strains. The Board has also estimated that more than half the rubber area contains trees that have outlived their economic life. Therefore, about 164,000 acres need immediate replantation. The total area planted till 1958 was 45,194 acres and of this replanting accounted for only 7,060 acres. To tone up the yields as well as to keep the trees in a good condition, it is necessary to replant at least 20,000 acres annually. A programme of this magnitude would need an investment of Rs. 50 crores at the rate of Rs. 2,500 per acre.

2.112 In certain well managed estates in Kerala, the yields are reported to be as high as 1,600 lbs. per acre. A large number of estates yield between 700 to 1,000 lbs. This shows the potentialities of raising the yields if the gardens are properly managed. There are also instances of estates, which yielded only 150 lbs. per acre, which have yielded 500 to 600 lbs. per acre after reorganization and improvement of the estates.

2.113 India is the only country in the world which is a producer and at the same time an industrial consumer of natural rubber. The indigenous production of natural rubber in India at present meets about half the needs of the country, the other half being met by imports. The demand for rubber is increasing at a very fast rate and is estimated to be 55,000 tons by 1961, 82,000 tons by 1966 and 125,000 tons by 1971.[1] This means that by 1971 the demand for natural rubber would be about eight times the present level of production. It is, therefore, suggested that utmost possible effort should be put in to step up the production of natural rubber in Kerala.

2.114 Rubber production can be raised by increasing the yields as well as by extending the area under the crop. An increase in the yields is a short term measure which can be realized, say, by the end of the Third Plan, provided the necessary measures are quickly implemented. Adequate annual application of fertilizer mixtures (NPK) coupled with soil conservation measures, working the soil and regulated tapping are some of the important measures that may be adopted. These measures can be undertaken more effectively and economically if the holdings are of larger size. Efforts at intensive cultivation should, therefore, be co-ordinated with increase in the size of small holdings—especially the small ones with less than 15 acres. This could be best achieved through the formation of cooperatives. The Government and the Rubber Board should initiate future development on these lines.

2.115 In addition to replantation, as suggested above, a regular plantation programme is necessary for a sustained increase in output. Raising new plantations to the extent of 300,000 acres may be suggested as the target for the next two Plans. A higher target would be only too desirable. There may, however, be some difficulties in implementing the plantation programme owing to scarcity of land. The exact scope for extension of area under rubber is not known. Various sources put the likely extent of this area to be between 2.25 lakh and 7.5 lakh acres. It is, therefore, suggested that the Department of Agriculture and Forestry should conduct a joint survey to make an accurate estimate of the extent of such land in the State. However, it is necessary to emphasise that the proposed plantations should consist of

[1] NCAER estimates.

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large estates. The small holdings, as explained before, are not economical and have low yields. It is, therefore, necessary to make adequate safeguards against the creation of small units.

2.116 Moreover, care should be taken to see that all future plantings are done with improved clones. This can be much better ensured if departmental planting and working of the estates by Forest Department is undertaken instead of leasing the land under Government ownership to individual growers. It may be assumed that out of 3 lakh acres of proposed plantations, 2 lakh acres would be under Government management and the rest would be planted by private growers. The programme may be phased at the rate of 30,000 acres per year. The total investment for the whole programme would thus be Rs. 75 crores.

2.117 In well-managed estates, the trees begin to yield after seven years. Assuming that the new plantings yield at an average rate of 700 lbs. of rubber per acre, the output of rubber from these would increase progressively from 9,380 tons to 37,520 tons in 1971. Full results from the proposed 3 million acres of new plantings would be visible only from 1978 onwards at the rate of additional 93,800 tons per annum.

Pepper

2.118 The cultivation of pepper in India is almost entirely concentrated in this State which produces over 95 per cent of the country's total output. During 1958 India produced about 27,000 tons of pepper, approximately 45 per cent of the overall world production. Before World War II, Indonesia was the leading producer and exporter of pepper, but since then India has assumed that role. Between 1939 and 1951 production of pepper in the country increased by 16 per cent.

2.119 Large scale cultivation of pepper is confined only to the submountain tracts on or below the Western Ghats. It is also grown in the plains but as a protected garden crop in the compounds of houses and not as a plantation crop. Pepper is a perennial climbing crop and lasts for 20 to 30 years. There are on an average 300 to 400 standards (pepper bushes) per acre. On an average, each standard under plantation conditions yields 1 to 2 lbs.; but it is not uncommon to find standards in house compounds yielding even 40 to 50 lbs.

2.120 As in the case of coconut, it is difficult to arrive at a correct estimate of the area under pepper. The estimate prepared by the Directorate of Statistics in Kerala is of the order of 224,658 acres for 1957-58. Of this, Malabar region accounted for 136,854 acres and the rest were in Travancore-Cochin area. The output of pepper during the same year was 26,020 tons in the whole of Kerala, of which the share of Malabar region was 42 per cent. Malabar with over 60 per cent of the area under pepper produces only 42 per cent of the output.

2.121 Per acre yield was the highest in Alleppey and Quilon (402 lbs. per acre) followed by the districts of Trichur, Ernakulam, Trivandrum and Kottayam (375 to 381 lbs. per acre). Malabar region has comparatively very low yields (180 lbs. per acre). This may, perhaps, be due to cultivation of pepper in Malabar on extensive rather than on intensive lines.

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2.122 The development of pepper has not been receiving adequate attention. The crop was practically neglected during the First Plan. However, the high price of pepper which prevailed during early fifties provided a good incentive for extension of the area under pepper. The main work during the Second Plan was directed towards establishment of nurseries, extending the area under the crop and replacement of unthrifty vines with better ones. A total of 2,000 acres have been replanted so far.

2.123 It is possible to increase the yield of pepper from the present level of above one lb. to 2 or 3 lbs. per standard through intensive cultivation, better manuring, better varieties, and plant protection measures, especially against *pollu* disease. Manuring of pepper has been a neglected field and with the application of fertilizer mixtures (3 cwts. of ammonium sulphate + 4.5 cwts. of super phosphate + 1 cwt. of muriate of potash per acre) the existing yields could be almost doubled within a year. Moreover, some extension of area under pepper vines can also take place in house compounds, as an inter-crop in small holdings and in tea and rubber plantations on land unsuited for the main crop.

2.124 Since pepper is primarily an export commodity, 75 per cent of the produce being annually sent out of India, its future scope is very much dependent on the foreign markets. After the last war, India emerged as a major exporter of pepper in the world. The USA was our largest importer, accounting for over 70 per cent of our exports. But, of late, other countries such as Indonesia, Sarawak and Malaya have begun to export larger quantities and as a consequence, the USA, now accounts for only about 20 per cent of our exports. The prices have also fallen from a peak of Rs. 4,158 per candy during 1951 to Rs. 677 in 1959.

2.125 The above evidence points to an increasing degree of competitiveness in the world markets for pepper, and India is fast losing ground to the new entrants. So far India has been able to maintain the volume of exports because of large off-take by USSR and other East European countries. However, demand from these countries cannot be expected to fully compensate for the likely fall in future exports to the USA and other Western countries. It may, therefore, be seen that for maintaining the existing level of exports, not to speak of increasing it, it is essential that Indian prices should be competitive.

2.126 Prospects for internal demand, on the other hand, seem quite bright. Between 1952 and 1958, internal demand rose by about 25 per cent from a level of 5,000 tons. In view of rising population and fast developing food processing industry, future internal demand is likely to maintain this trend.

2.127 Oleorisin, a pharmaceutical product, is extracted from pepper. A considerable amount of pepper in the western countries is used for extraction of this alkaloid. Oleorisin could be extracted in Kerala and an export trade developed out of this. This aspect needs further investigation.

Cardamom

2.128 Cardamom is the most expensive as well as the most delicious of all the spices. India produces about 70 per cent of the world output of cardamom. The

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to a considerable degree in Malabar and Nelliampathi (Travancore-Cochin) areas. The major concentration of area occurs in the Kozhikode district of Malabar. It had 89 per cent of the total coffee area in the State during 1957-58. Between 1955 and 1958, coffee production in Malabar rose (18%) while that in Travancore-Cochin declined (16%). Similarly, the area under coffee during the same period registered an increase in Malabar (28.3%) but declined in Travancore-Cochin region (15.0%).

2.134 The average yield per acre of coffee in Kerala is rather low. It has been lower than the all-India average and is far below the average yield in Mysore, the principal coffee growing State in India, (1955-56 Kerala, 285 lbs. per acre; all-India, 369 lbs. per acre; and Mysore 395 lbs. per acre). Moreover, while the yields elsewhere in India, especially in Mysore, have been rising, in Kerala they have fallen from 368 to 285 lbs. per acre during 1951–58. Within Kerala, the yields are the highest in Kozhikode district which is largely due to the better management of estates in this district.

2.135 One of the characteristics of coffee plantations in Kerala is the overwhelmingly large number of small estates. In 1958, there were 14,475 registered estates with a total area of 47,675 acres. Of these, 12,412 were of less than five acres in size. There were only 99 estates out of 14,475 with an area over 50 acres. (Table 14)[1]

2.136 There is a distinct relationship between the size of coffee estates and the output per acre. It is noticed that yields increase progressively as the size of the estates increases. The yield per acre of *Arabica* variety in estates in the size group of 5-10 acres was 0.68 cwts. per acre, while for the estates with 200 acres or more, it was 2.26 cwts. Moreover, the quality of coffee produced on small plantations is also inferior and fetches only 65 per cent of the price of coffee produced on big estates. It is difficult to ascertain the most economic size but it is believed that for effective and profitable functioning, the minimum size would be 50 acres. If this is accepted, then only less than one per cent of coffee estates in Kerala are economic. The question of making these plantations economic through consolidation or extension of area under coffee plantations should, therefore, receive serious attention. Two more points need attention. First, new areas should be planted with coffee *Arabica* rather than coffee *Robusta* since the former gives higher yields. Secondly, as in the case of tea, replantation is also over-due in the coffee plantations. Remedies on the same lines as suggested for tea hold good for coffee also.

2.137 Unlike tea, the major portion of which is exported, coffee plantations are substained largely by the demand for internal consumption. Internal demand, however, has not been keeping pace with rise in the output of coffee. At present India has quite a large surplus in coffee and efforts are being made to export the surplus. In spite of an enormous surplus of coffee in South America, efforts in India have yielded good results as shown by an increase in exports from 9,000 tons in 1952-53 to 15,228 tons in 1956-57.[1] Most of our exports go to East European countries. There is scope for stepping up the exports further, in spite of the world

[1] Source: Coffee Board, Bangalore.

2 [see p. 279, category 11b -- Analyst]

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glut since the better type of plantation coffee, for which India is well known, is in demand at a premium in the continental markets. At the same time internal market, about half of which is in North India is yet to be explored. This should also be developed.

2.138 Higher production can be achieved both through higher yields and through the extension of area under coffee. Increase in cultivated area under coffee is possible by fuller utilization of the estate areas. It is estimated that there were about 21,000 acres of land at the end of 1957-58 attached to the estates which were not being utilized for coffee cultivation. These could be planted with coffee. The cost of planting coffee and bringing it to the bearing stage is about the same as that in the case of tea, that is, Rs. 2,500 per acre. The total investment required, therefore, comes to Rs. 5.2 crores, which may be provided to the growers in the form of loans and the Government and the Central Coffee Board should help farmers in securing the necessary credit. The productivity per acre can be raised to 400 lbs. per acre by better manuring, larger application of fertilizers and efficient management of the estates. Efficient management, however, could become effective only after the size of the farms has been increased to a basic minimum.

Cashewnut

2.139 Cashewnut forms the main raw material for one of the major industries of Kerala. The cashewnut industry stands in importance next only to that of coir in the Kerala economy. In view of current shortage of raw nuts, which is adversely affecting the local cashew industry, measures to supplement indigenous supply are of great importance.

2.140 Cashew is grown on a wide variety of soils—ranging from coastal sandy to laterite hill top soils. It is hardy and drought-resistant but very susceptible to frost. In 1957-58, the total area under cashew in Kerala was 109,000 acres which is about 44 per cent of the total area under cashew in the country. Of this, the former Travancore-Cochin area alone accounted for over 71 per cent (77,481 acres), the rest being in the Malabar region. The production of raw cashewnuts in 1957-58 was 68,000 tons as against 54,000 tons in 1952-53, showing an increase of 26 per cent. The area under cashewnuts during the same period increased by only 1.8 per cent.

2.141 Cashewnut, at present, is rarely grown on a plantation scale. It is grown in compounds of houses, inter-spersed with coconuts, mangoes and arecanuts, and in outlying areas which are considered unsuitable for the growth of any other crop. When grown on plantation scale, about 60 to 70 trees can be planted in an acre, but it is not rare to find as many as 200 trees per acre in certain areas of Kerala. Such congestion, however, has adverse effect on output. Consequently, current yield per acre of cashewnuts (1,400 lbs. per acre) is much lower than what it could have been, had cashewnuts been grown on plantation scale. Under good conditions and in good season an acre may even yield up to one ton.

2.142 The scope for increase in the output of cashewnuts, through increase in yields or through extension of area, seems to be rather limited in Kerala. Raw nut is a low value commodity. Manuring the trees and spending on their maintenance,

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But much of this increase is the consequence of a greater diversification in agricultural activities with a view to reducing unemployment and under-employment among family labour and raising the family income. Poultry-keeping has, of late, become very popular with the rural families and it is unusual to find families in the rural areas which do not rear at least a few laying birds. Kerala produced 137 million eggs (hen eggs—114 million; duck eggs—23 million) in 1951, and ranked fifth among the States in egg production. Production of eggs is now much higher and may be around 200 million. Kerala is also the biggest exporter of eggs. These are sent as far as Punjab in the north, Calcutta in the east and Bombay in the west and even to foreign countries, mainly Ceylon.

Low Productivity of Livestock

3.5 On an average a cow yields 330 lbs. of milk per year, a buffalo 619 lbs. and a goat 40 lbs. These yield rates compare very unfavourably with those for other parts of India (Table 16).* The low productivity of animals is partly due to the poor inherent breed characteristics and partly due to the conditions under which they are reared. The cattle found in Kerala are all of a non-descript type. They are small in size and build. They are stunted in growth. Buffalo in Kerala weighs about half of its counterpart in U.P. or Punjab. The same is true of other livestock too.

3.6 The livestock, especially the bovines, are reared under unwholesome conditions. They are under-fed. The bulk of the ration consists of roughages, mostly rice straw, and is grossly deficient in proteins and other protective properties. The livestock feed available in Kerala is also highly deficient in some of the important bone-building minerals such as calcium and phosphates. This is a direct consequence of a high rainfall which has leached off most of these minerals from the root zones of soils. In the absence of adequate phosphatic and calcium soil amendments, the crops grown in such soils are poor in these minerals. Lack of minerals has a telling effect on the health, build and general condition of the livestock of Kerala. The small size and build are important causes responsible for their low milk yield and poor work output.

3.7 Nutritional deficiencies lead to a number of serious consequences. Poor health results in low vitality and resistance to diseases as well as a low rate of nutritional utilization from feeds. All these factors are responsible for a low level of efficiency and other hazards such as a high rate of mortality and a low rate of fertility. However, realizing the reasons for low productivity, many enlightened farmers have taken to scientific rearing of livestock and have started adding concentrates, such as waste grains, oil cakes and mineral mixtures to the cattle feed. Credit for this goes to the State's Animal Husbandry Department which has been making special efforts to educate the peasantry on the need for adding mineral mixtures to the livestock feed. The Department has been distributing mineral mixtures to farmers at subsidized rates in order to popularize them.

3.8 In view of the very poor quality of livestock in the State there is an urgent need for developing animal husbandry in Kerala. Although animal husbandry

* [Table 16, appearing on p. 282 of the text, has not been processed -- Analyst]

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urban households and this is due to better management. Scientific goat-rearing should be encouraged in the State by educating the people about the techniques and economics of goat-rearing. For the sake of convenience and better implementation, goat development may form a part of the Key Village Programme. This would effect saving in costs and also reduce the need for additional personnel. Through this programme, the local stock can be upgraded with the desirable outside milk breeds as Bikaner or Jamunpari after studying their performance and suitability.

Rearing of Pigs

3.22 Pig-rearing is not popular in Kerala, even though conditions such as climate and rainfall are favourable. The pig population has even fallen by 3.6 per cent during the period 1951–56. Piggery development did not receive any attention during the First and Second Plans and this, perhaps, is partly responsible for the decline of interest in pig-rearing in Kerala.

3.23 Pig-rearing needs to be encouraged in the State, as it is the quickest means of increasing meat production. But there has not been any research or studies on pig-rearing which could be applicable to the conditions prevailing in Kerala. It is suggested that the State should undertake research on these problems without any delay. In the meantime, this avocation may be developed on the lines suggested by the Department of Animal Husbandry for the Third Plan through the creation of piggery development blocks. In addition, the State should also provide certain facilities such as the supply of feed, provision of processing, grading, storage and marketing facilities and supply of credit on easy terms.

Supply of Feed

3.24 As a result of measures proposed for agricultural development, the production of cereals, pulses and oilseeds would increase by about 100 per cent during the next decade. Since livestock, especially the bovines, are fed on byproducts of agriculture (stalk, straw, husk, bran, etc.), the availability of basic feeds would also increase. Rice straw, the principal roughage in the State even may be surplus. Concentrates will, however, continue to be in deficit despite the large likely increase in the output of pulses and cereals. The situation of course, would change if oilcake, the byproduct of oil-crushing industry, is not allowed to move out of the State. This is a matter of all-India policy as the coconut oilcake is an important item that is marketed outside the State in large quantities and is even exported. Assuming, therefore, that situation regarding oilcakes does not alter, the State should do the needful towards making concentrates easily available to the farmers. This deficiency could partly be reduced by supplying concentrates (ready-to-feed mixtures) in dehydrated form. Different ready-to-feed mixtures should be evolved for cattle, poultry and other livestock. The composition and formulae for such mixtures should be worked out on the basis of nutritional experiments. In anticipation of demand for the mixtures, it is suggested that three ready-to-feed mixture factories of 200,000 tons capacity each, may be started in the State during the Third Plan.

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433 231 234 sector. The dairy farms may also take up the manufacture of high value items such as creamery products and *cheddar* cheese.

Processing and Marketing of Poultry Products

433 235 474 3.33 Proper disposal of poultry products is also a pressing need. At present there are a number of private as well as cooperative organizations in the Travancore-Cochin area for collecting and marketing poultry products. Some of them have even inter-State connections. These organizations have rendered satisfactory service to the poultry industry in Kerala. Credit goes to them for having developed export demand for poultry products of the State. All these organizations, however, are faced with serious limitations to further expansion and more efficient working. Their main problem is inadequate working capital. The other difficulties are: (*i*) lack of cold storage facilities, (*ii*) inadequate availability of transport aids and containers for safe transit, and (*iii*) lack of technical guidance. The State should take steps to remove these difficulties. It is suggested that the State should encourage municipalities to construct cold storage godowns. This would benefit not only the poultry industry, but also other activities such as horticulture, meat packing and fisheries. The other needs could be largely looked after by the Development Blocks. It is also suggested that the poultry cooperatives should be asked to grade eggs before marketing them.

433 235 439 3.34 It may not be possible to find market either inside or outside the State for all the marketable surplus in poultry products in the future. This fear is justified in view of the fact that significant development in poultry industry has taken place in some of the egg-importing States such as West Bengal, Madras, Punjab and Bombay under the Second Plan. It may, therefore, be expected that the production of eggs and other items in these States would increase considerably by the end of the Third Plan. Such a development would hit Kerala's exports adversely. In order to guard against such consequences, it is desirable that alternative means of disposal of eggs and poultry meat are planned now. The best method would be to set up a combined egg powder-cum-meat packing plant in a convenient location somewhere in the Travancore-Cochin area. The in take of the plant may be of the order of 30,000 eggs and 500 to 1,000 birds per day. The birds may be processed for preservation and packed in polyethelene bags in convenient numbers. A product like this is bound to be popular all over the country. The plant would need an investment of Rs. 3 lakhs.

433 23 452 3.35 Animal husbandry needs State support and help in other ways too. Loans from the State Government to both processers and cooperatives would be of a great help. The average farmer is at present unable to take to livestock-keeping as a subsidiary occupation on account of lack of funds for investment as well as for working capital. Normal farming agencies like banks and cooperatives do not serve them because of their non-credit worthiness and the uncertain nature of livestock business. Seeking the help of local money-lenders would be too expensive for these ventures. Only the State can solve the problem of rural credit in a situation of this type by making available larger *takavi* funds, arranging for loans through banks and cooperatives, by agreeing to share the risks, etc.

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number of items of minor forest produce. It is, therefore, suggested that a proper survey of the forest areas should be conducted to assess the extent of minor forest products available in the State. This will bring out the raw material potentialities for the phyto-chemical industry as well as other small scale industries which could be based on the minor forest produce of the State.

Raising the Long-run Forest Potential

4.38 There is not much scope in Kerala for extension of area under forests through afforestation programmes. There are already a number of competing claimants for land use. The proportion of area under protective vegetal cover, as discussed, is also quite adequate in Kerala. What is necessary is to minimize the extent of further in-roads into forest areas by clear felling for cultivation, etc.

4.39 Having ruled out large scale afforestation as a means of improving the forest resources, the only other possible methods, to augment the forest pontential are improvement in forest management and raising of new commercial plantations. Forests under the jurisdiction of the Forest Department are already being managed on scientific lines. The primary need, therefore, is the acquisition of private forests so that the standards of management could be enforced uniformly throughout the State.

COMMERCIAL PLANTATIONS

Teak

4.40 In addition to the existing 75,000 acres under teak, there are 640,000 additional acres of low quality deciduous forests which are suitable for conversion into the valuable teak plantations. This changeover will considerably improve productivity of the deciduous belt. About 9,000 to 10,000 acres can be taken up every year against 2,000 to 2,500 acres being planted annually at present. The technique of raising these plantations has been perfected in Kerala and the present agri-silvicultural method, whereby the plantations are raised free of any cost to the State, may be continued.

Rosewood

4.41 Rosewood is in great demand by the furniture industry. Logs of over 72" girth are also exported, mostly to Italy. The supply is getting exhausted and it is desirable to replenish the stock by raising new plantations. The tree is slow growing. It is, therefore, proposed that it should generally be raised on the periphery of the teak plantations where it can be left to grow for 2 or 3 teak rotations. There should be no extra cost as the plantations are to be raised along with teak by the agri-silvicultural method.

Softwood Plantations

4.42 As a result of the difficulties in the way of regeneration of evergreen forests, the softwood species grown in these forests are in short supply. By the end of the

5.16 Chinese nets and stake-nets are the most important type of tackles used in the backwaters. There are about 1,180 Chinese nets and 5,400 stake-nets operating in the State. These nets are registered on payment of an annual licence fee assessed on them.

5.17 A large area of low lying paddy fields adjacent to the backwaters is used for prawn culture. The whole area is enclosed with earthern embankments (5 to 6 feet high) provided with sluice boxes for regulating the flow of water. Prawn culture in paddy fields is done on an extensive scale in Ernakulam and Trichur districts. Cultivation in these fields is restricted to a single crop lasting from July to September. The fishing operations in these fields extend from October upto the middle of April. Fishing is done with bag nets, scoop nets and drag nets. The fields are grouped into three classes on the basis of productivity. The average yields per square mile per annum from I, II and III Class are estimated at 1,080 lbs., 680 lbs. and 330 lbs. respectively. The area under the three classes are shown in Table 26.

5.18 About 80 per cent of the catches consist of prawns. On a modest estimate, the total production of prawns from these fields would be of the order of 4,000 tons. The rest of the catch consists of Mullets, Pearlspot, etc. Most of the prawns caught from the fields are cured and exported to the other States in India, Burma and Ceylon.

5.19 There are three brackish water fish farms in the State, one each at Mallapuram, Narakal and Ayiramthenga. The individual areas of these farms are 52.5, 42.5 and 22 acres respectively. An additional area of 28 acres is being converted into a farm at Ayiramthenga. Two more farms with a total area of 64 acres are also to be established.

River Fisheries

5.20 The river fisheries in Kerala are very poorly developed. Out of some 44 rivers traversing the State, only four, viz., Bharathapuzha, Periyar, Pamba and Beypore are more than 100 miles long. The more important fresh-water fish belong to the *Barbus* and Cat fish species.

5.21 There is no systematic fishing in the rivers and only a small number of fishermen are dependent on riverine fisheries. Fishing in the rivers is taken up as a hobby by the local people and the catches are utilized for domestic consumption. No data on production and the number of persons engaged are available in regard to river fisheries.

Culture Fisheries

5.22 There are a number of tanks, ponds and reservoirs in Kerala, covering an area of about 6,000 acres, However, the area suitable for fish culture is much less than this. A recent survey of culture fisheries shows that only about 260 acres out of a total area of 1,227 acres surveyed in Trivandrun, Quilon and Alleppey districts are suitable for fish culture.

Transport

5.46 The entire coastline of Kerala is well served by the railways. From Trivandrum to Kayankulam and from Tirur to Manjeswar, a total distance of 220 miles, the tracks are only two to three miles from the sea coast. In addition, there is a motorable road running almost all along the entire coastline. Head loads, bicycles, motor lorries, all these modes are employed for the transportation of fish to the markets depending on the distance of the landing sites from the consuming centres.

5.47 The State Fisheries Department operates four insulated vans. In addition, the Department operates two insulated carrier boats, one from Cochin and the other from Azhikode. These boats transport iced-fish through the inland waters to the interior places. For the marketing of fish in the interior areas, the Indo-Norwegian Project operates eight refrigerated vans.

5.48 It is estimated that the State will require about 60 road vehicles and 20 carrier vessels during the next 10 years. The capital expenditure on these is expected to be about Rs. 40 lakhs, of which Rs. 15 lakhs would be required during the Third Plan. The trucks and carrier vessels should, as far as possible, be owned and operated by Fishermen's Cooperative Societies. Expansion of insulated wagon facilities on the railways will be equally necessary. Insulated wagons should be provided on routes connecting the major production centres with the consumption centres.

Marketing

5.49 The marketing of fish in Kerala is not well organized. At present it is controlled by a few moneylenders and fish merchants. The fishermen are very poor and have generally to depend on borrowings during the off season. A departmental survey reveals that in 1958 the fishermen in Kerala had total assets of only about Rs. 30 lakhs against a total debt of Rs. 135 lakhs. Only a small percentage of the fishermen in Kerala own the boats and nets they use. Most of them work as employees under few boat-owner fishermen. In the pay-off period the boat-owner advances small amounts to the fishermen for their day-to-day needs. The catch is auctioned at the landing centres. The bidders include the fish curers, the retailers and lorry owners, who generally supply fish to the retailers.

5.50 Fish prices fluctuate considerably even in the course of the day. Fish is never weighed in the market. They are measured by standards such as heap, basket, and number, and these vary from market to market. The important wholesale fish markets in the State are located at Trivandrum, Kottayam, Tonur, Trichur, Kozhikode, Alwaye, Changanacherry and Athirumpuzha.

5.51 Changanacherry, Athirumpuzha and Vaniyankulam are the most important markets for cured and salted fish. In the coastal areas the consumption of dried fish is confined mostly to the off-season when fishing totally stops. In the interior of the State, owing to lack of transport facilities, cured fish is sold for the major part of the year. The State has a number of retail fish markets, every town or a group of villages having at least one.

5.52 Fish marketing in Kerala requires a great deal of improvement, both

rest of the production is exported to various countries, the bulk of it going to the USA and the UK. Export figures are given in Table 29 for the period 1956–59.

6.17 Irregular supplies made through the Koilthottam port, mainly due to labour difficulties, have resulted in the loss of contracts with importers in the USA. Export possibilities of ilmenite are now limited only to two contracts to UK totalling 1,50,000 tons per year. This setback has occurred in spite of the fact that the Chavara ilmenite has a high TiO_2 content (55-60%) and is cheaper when compared to Malayan ilmenite (about 45% TiO_2) which, however, finds a ready export market.

6.18 India, which at one time used to hold almost a monopolistic position in the export of ilmenite has now to face competition. Side by side with the expansion of titanium industry, other world sources for supply of ilmenite have come into operation as in Norway, Canada, Malaya, Australia, South Africa, etc. Whereas in 1940 India used to contribute 90 per cent to world production of ilmenite, now its share is only 25 per cent.

6.19 In view of the rapid expansion of India's steel industry, the consumption of TiO_2 pigment is itself expected to go up. The total requirements of ilmenite by 1965-66 would be 150,000 tons a year for export and 36,000 tons a year for the manufacture of TiO_2 pigment, on the basis of proposal for expansion of Titanium Dioxide plant at Trivandrum incorporated in this report. Table 30* gives demand for Titanium Dioxide pigment from steel industry and various other sources. The two existing companies can produce about 160,000 tons a year. Extra capacity of 30,000 tons a year will have to be installed, and this along with certain improvements suggested earlier may require an investment of Rs. 20 lakhs. Very little increase in labour force is envisaged. The existing labour force itself appears to be excessive, since the output per man per shift works out to a low level of 0.4 tons.

6.20 During the Fourth Plan period, steel production is expected to double itself. Therefore, by 1970-71, the demand for Titanium Dioxide may also be expected to be roughly double of the demand in 1965-66. This would necessitate another 30,000 tons of ilmenite per annum. Total requirement of ilmenite by 1970-71 would thus be 220,000 tons a year, comprising of 150,000 tons for export and 60,000 tons for the manufacture of Titanium Dioxide. This would involve further additional outlay of Rs. 10 lakhs. Even this order of expansion can be achieved with the existing labour at an output of one ton per man per shift which would measure a fairly reasonable level of productivity.

Monazite

6.21 Monazite is a phosphate of thorium and cerium with rare earth elements and small quantities of Uranium Oxide. It constitutes a source of the radio-active element, thorium being used for atomic energy purposes. Monazite was first discovered in India, by C.W. Von Sohomberg, a German citizen, in 1909 along the beach at Manavalakkurichi.

6.22 Monazite occurs along with other heavy minerals in the beach sands. Reserves of the order of 6.7 million tons are estimated to be present in the bar between Neendakara and Kayarkulam. There is, however, no production of monazite

*[Table 30, appearing on p. 290 of the text, has not been processed -- Analyst]

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

concentrates from Chavara, the Manavalakkurichi (in Madras State) material being preferred because of its higher thorium content.

6.23 A rare earth factory is located in the State at Alwaye, which processes 1,500 tons of monazite a year ; but it obtains its requirements from Manavalakkurichi in the Madras State. This factory produces Thorium Oxide, rare earth salts and Trisodium Phosphate. The Chavara Monazite may be considered for use in the rare earth factory instead of the monazite from Manavalakkurichi in Madras State, particularly in view of the fact that monazite would be a byproduct of ilmenite which is won in larger quantities in Kerala and may, therefore, prove cheaper.

Rutile

6.24 Rutile is another titanium mineral occurring in smaller quantities in the beach sands. The beach washings contain, on an average, about 4 per cent of rutile. A portion of the sand bar at Neendakara is estimated to contain 740,125 tons of the mineral.[1] Kerala is the only State in India producing rutile.

6.25 At present only one of the mineral sand factory units produces this mineral. Electro-static separators are used in concentrating rutile from the non-magnetic tailings after the extraction of ilmenite. Recovery is one-fifth of the rutile content of raw sand and the rest is allowed to go into the tailings for lack of equipment.

6.26 Only small quantities of rutile are produced. During 1959, 482 tons valued at Rs. 4.75 lakhs were beneficiated. The current price is Rs. 1,000 a ton. The mineral is not utilized in the State, but is sent to Bombay and Calcutta for the manufacture of welding rods. During 1957, 155 tons of rutile were imported to meet the requirements of this industry. Future requirements of welding rods within India is estimated to go up from 417 m. ft. in 1960-61 to 2,022 m. ft. in 1970-71.[2] To meet this rise in demand, output of rutile would have to be stepped upto 6,750 tons by 1970-71. An expansion in capacity of this order would require an investment of the order of Rs. 10 lakhs.

Sillimanite and Zircon

6.27 Sillimanite as well as zircon occur in small amounts in beach sands in association with ilmenite and other heavy minerals. They average 5.9 per cent and 4.2 per cent respectively of the beach washings. In addition, 1,916,260 tons of sillimanite and 799,350 tons of zircon are estimated to form a part of the Neendakara bar.[3] Only experimental production of either of these minerals has been taken up so far.

6.28 Sillimanite is mainly used in refractories, but the internal requirement of sillimanite refractories is very small. Moreover, the material from Assam which is of a massive variety can be shaped into blocks and used directly. Export possibilities are also dim and due to the development of artificial mulite bricks from domestic kyanite in the USA. Exports have dropped from 20,000 tons to 6,000 tons in 1957.

[1] *Peaceful Uses of Atomic Energy*, Proceedings of the Second International Conference, P. 102.
[2] NCAER estimates.
[3] *Peaceful Uses of Atomic Energy*, Op. Cit, p. 102.

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*433 3/7 the extensive horizontal spread of this horizon, mining operations are capable of considerable lateral expansion.

[655] 6.34 The china-clay from Quilon and Trivandrum districts is mostly consumed within the State by the Government-run ceramic factory at Kundara and the other privately owned ceramic factories, as well as by the rubber, paper, insecticide and cement (for white cement) industries in the State. A few hundred tons are supplied [439] to consumers in the neighbouring States and a small quantity is also (75 tons in 1959 and 44 tons during Jan.—August 1960) exported to Ceylon. The crockery and sanitaryware plants in the State consume about 1,900 tons of refined clay and another 1,700 tons are used by the insecticide, rubber and paper factories in the State. The china-clay produced from Cannanore district is mostly exported to other parts of India.

6.35 It is worth noting here that India imports textile grade china-clay. Import figures for 1956 and 1957 are 7,282 tons and 4,354 tons respectively. The State could very well fill this gap particularly in view of the excellent quality of the material it possesses. Increase in output to meet this demand should be undertaken from the Quilon district, where large reserves are available.

6.36 Demand for china-clay (in terms of crude material)[1] is likely to be as under by 1965-66:

	(Tons)
For ceramics, inclusive of insulators	9,000
For the rubber, paper and insecticide industries	10,000
For the textile industry	15,000
For white cement manufacture	12,000

6.37 During the period 1966–71, china-clay requirements are likely to go up still further as a result of setting up of another high tension insulator factory and increase in demand from the paper, textile and insecticide industries, and are estimated to reach 70,000 tons in terms of unwashed clay by 1970-71. To meet this rise in demand, mining in the public sector at Kundara can be expanded to produce an additional 13,500 tons by 1965-66. This would hardly involve any mechanization. Along with this, the capacity of the washing plant will have to be increased to 30 tons a day. The expansion of mining operations and installation of additional washing capacity proposed would roughly involve a capital outlay of Rs. 5 lakhs.

6.38 Reopening and development of the mines at Chathanoor should also be considered at a rate of exploitation of 22,000 tons of crude clay per year. A washing plant with a capacity of 30 tons a day would be required at this mine. This mine and washing plant may be operated in the private sector. The capital outlay required would be of the order of Rs. 5 lakhs and the mine and washing plant would together provide employment for 310 persons.

6.39 In order to produce an anticipated 70,000 tons per year by 1970-71, representing an increase of 24,000 tons a year over the Third Plan period, a further expansion of mining operations and additional washing capacity of the extent of 20 tons a day will have to be considered either at Kundara or Chathanoor. The additional

[1] Refined china-clay is roughly one-third the weight of crude china-clay.

6.67 In the erstwhile State of Travancore-Cochin, there were 14 centres of production around Cape Comorin and one at Malipuram, Vyppeen Island, Ernakulam district. Consequent upon reorganization of the States, there is only one salt work in Kerala today. This is reflected in the sudden drop in production to a few hundred tons of salt between 1955 and 1956.

6.68 The prime requisite for the manufacture of salt by the solar evaporation method is a dry climate with accompanying low humidity. Such a condition is rarely obtained anywhere in the State. The result is that the yield of salt is very low with the cost of production at 75 nP. to a rupee per maund (in Tuticorin—cost of production is 25 nP.). In view of the unfavourable climatic conditions, this industry does not appear to have much prospects in the State.

Tile-Clay

6.69 Tile-clay is the raw material for one of the major industries of Kerala viz., the tile industry. More than 150 tile factories operate in the State, providing employment to over 10,000 workers. Tiles produced are sent to other parts of India as well as to markets in some of the Far Eastern countries. The exports are mainly from the Feroke area.

6.70 Local earths, silts and clays are found along the alluvial flats of most of the rivers of the State. Clay collection is seasonal and is undertaken through contractors. It provides employment to about 3,500 people. Collection is done manually and the clay is transported by countrycrafts along the waterways, or by roads, where water transport facilities are not available. Depending on the distance of transportation, the price of clay varies from Rs. 2 to Rs. 5 per ton at the factory.

6.71 In 1865, the 'Basel German Industrialists' started the first tile factory in the country at Mangalore with the object of securing the Far East Market, which was until then being supplied by the French tile industry in Marseilles. The industry then spread rapidly, first to Feroke near Kozhikode and later on to Quilon and other areas, until today, Kerala can well claim to be the home of the tile industry in the country.

6.72 Production of tile-clay in the State during the last few years is given in Table 31.[1]

6.73 As can be observed, there has been a declining trend in tile production. The main part of the decrease has taken place in the major tile producing areas of Trichur and Quilon,

6.74 The decline in output of tiles is due to a shrinkage in the foreign markets. On the other hand, an optimum area for distribution within the internal market is a belt of 400 miles from the coast. In view of the near saturation point which Kerala's tile industry has reached, prospects for increased production of tile-clay are rather bleak.

Other Minerals

6.75 *Gold* : Occurrences of gold in Wynaad and Nilambur area have been known since the late nineteenth century. The discovery of old workings led to the

[1] [Table 31, appearing on p. 291 of the text, has not been processed -- Analyst]

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the cost of generation as estimated at present would rarely exceed 2 nP per unit. As against this, the cost per unit of thermal power is estimated to vary between 6 nP to 10 nP for stations which are far from coal fields, as would be the case if Kerala were to go in for thermal generation. Table 35 presents some factual data regarding the cost of hydro-power generation.

7.20 Development of thermal power resources sometimes becomes necessary as a stabilizer for fluctuations in generating capacity of hydro dams caused by variations in the extent of rainfall. This problem does not arise in case of Kerala since a high level of rainfall which, in addition, is fairly well distributed over the year, is practically assured. As pointed out in another chapter, the co-efficient of mean deviation for annual rainfall in the case of Kerala is one of the lowest in the whole of India.

7.21 On account of these factors, electric energy from hydro resources would continue to occupy a predominant place in Kerala. The possibility of generating nuclear power within the foreseeable future can almost be ruled out for Kerala. Investment in nuclear power stations is of the order of Rs. 1,800 to Rs. 2,500 per kW of installed capacity, which is higher than those for thermal and hydro stations. Since Kerala has plenty of untapped hydro-power potential, the question of using nuclear energy does not arise.

DEMAND FOR AND SUPPLY OF POWER

7.22 The simultaneous maximum demand, as recorded on the State electricity system, reached a peak of 94 MW during September, 1960. Over and above this, purchase from Madras State for Kerala system was about 8.6 MW and from Kerala to Madras was about 2.6 MW. So the net draw from the Madras system during September, 1960, was of the order of 6 MW. Hence the latest recorded demand on the State may be taken to be of the order of 100 MW during Sepember, 1960, as against the available firm capacity of 84.5 MW.

7.23 In this context, an independent forecast may be attempted here on the basis of projections for industrial output made in the chapter on Industries. Factory sector is the main industrial consumer of electricity accounting for roughly 65 per cent of energy generated. The net output of factory industry is projected to increase from Rs. 24.4 crores in 1960-61 to Rs. 89.2 crores in 1970-71. In 1955-56, power consumption by industries corresponding to net factory output of Rs. 18.40 crores was 224 million kWh. In other words 1.24 units of electricity were used to produce one rupee worth of net output in industries. The corresponding ratio for the country was 0.8 kWh/Rupee. The relatively higher coefficient in Kerala reflects the more power-intensive industrial structure. This is mainly due to the location of aluminium and other electro-chemical industries in Kerala.

7.24 According to NCAER's projections[1], the power intensity of industries may be expected to increase both as a result of the spread of power-using equipment and

[1] *Demand for Energy in India* (1960—75), NCAER.

[Table 35, appearing on p 293 of the text, has not been processed -- Ed.]

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power generation will naturally be restricted. It is, therefore, essential that in the interests of the national economy, hydro-power generated at low cost in Kerala flows abundantly, and in bulk, to Madras State.

LIMITATIONS AND OBLIGATIONS OF EXPORT SALE OF POWER

7.34 The generation and export sale of the surplus electricity potential of the State, as a business proposition with a definite profit motive, just like any other industrial undertaking, has certain limitations and obligations which should be understood in advance. It is not as if this surplus generation places the State in a comfortable position of meeting any unanticipated demands of sizable magnitudes within the State itself at any time and gives it the option to export only whatever is in surplus to its needs from time to time. Export commitment is a definite contract and, except in the case of valid *force majuri* conditions, contractual obligations have to be met even when there is an acute power shortage within the State itself due to normal causes of development. Electricity industry is capital-intensive and involves the use of sizable foreign exchange for capital equipment. Electricity projects also take a long time to materialize. In a planned economy for the country as a whole, the available resources are equitably distributed for maximum regional growth. Therefore, when the economic surplus power potentials of the State are exploited for export to the neighbouring State, on considerations of overall national economy, corresponding provision for power generation in the neighbouring State is at the same time avoided and it is made to depend on import of power for its needs. These long-term commitments have, therefore, to be firmly and clearly understood in advance.

Rates for Export Sale of Power

7.35 Viewed as a commercial proposition, the maximum price which can be demanded for this exported power will have to be just less than what it would have cost the neighbouring State if it were left to its own costly thermal generation. In addition, the selling State should surrender a small prefixed margin of its profit to the purchasing State in order to make the purchase attractive and worthwhile. In the case of Madras, there can be no difficulty at all. It will have to pay for Kerala power what it pays for Neyveli power. There is also an added advantage for Madras in taking Kerala power at thermal rates. Neyveli will give only a firm power all through the year and can serve only as a base load station. Excepting the hydro stations in Nilgiris, all other hydel stations of Madras are tied up with irrigation regulations and the varying seasonal outputs have to be largely firmed up by an integrated operation of all these stations. There are limitations in this when seasonal power growth tends to assume sizable proportions and the full utilization of the seasonal discharges for power generation may not be possible. Luckily the position is different in Kerala. The large hydro potentials of Kerala are predominantly for power generation. Integrated operation of the hydel stations of Kerala with the Madras grid is possible and it can effectively firm up the seasonal power potential of Madras State. This will also

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433 377 439 result in mutual advantage to both the States and optimum exploitation and utilization of the water resources of the region as a whole. Kerala can thus give Madras varying power through all the seasons of the year and effectively firm up the seasonal power potential of the State. This operational aspect has also to be kept in view while planning projects for an integrated operation and export of surplus power of Kerala to Madras. Hence, Kerala power at average kWh rates of Neyveli supply, is more advantageous to Madras than Neyveli power. It benefits Kerala also.

Rates for Sale of Power to Consumers within the State

433 377 7.36 From the economic standpoint, the use to which power is put is just as important as its production. The two chief aspects of electricity consumption are: (*i*) Consumption of electricity as a factor in production in the field of industry, agriculture and traction. This can be termed "productive" power, or power in relation to productivity which activates the production and distribution circuits on which the increase of a country's wealth depends. (*ii*) Consumption of electricity for the direct, collective and individual needs of the people that is energy as a consumer good. This can be termed "non-productive" power.[1]

7.37 In Kerala, productive consumption (industrial power, irrigation and agricultural de-watering) formed about 85 per cent of the total in 1959-60 and non-productive power (domestic, light and small power commercial light, and small power public lighting and water works) formed the remaining 15 per cent. The domestic consumption alone came to about 10.7 per cent. The corresponding figures for all-India (1959-60) were 77.9 per cent (productive), 22.1 per cent (non-productive) and 11.1 per cent (domestic consumption alone). But this small percentage of non-productive consumption contributed much more (than its reasonable share to the total revenues) from the sale of power.

433 377 651 7.38 For ready comparison, the consumption of energy distributed by Kerala State Electricity Board to its consumer within the State (i.e., excluding bulk supplies to Distributing Licencees and to the neighbouring Madras State) and the revenue thereof are given in Table 36 for the year 1957-58. The statement is revealing.

[1] "Productive" power helps to raise the standard of living of the community while "non-productive" power rather serves to measure the standard achieved. The rate-fixing policy must take into account these two distinct categories of consumption. Generally speaking, the policy should be one of cheap "productive" power for such productive cycles as would lead to a rise in wages so that it would then become possible for "non-productive" power to be sold at normal rates. In fixing higher rates for "non-productive" consumption, the ultimate objective of raising the standard of living of the community as a whole should not be lost sight of. The rate itself should not be unduly high to deny the service altogether to the bulk of the community living in an electrified locality. To this end, the rate fixed for "non-productive" power should also take into account the capacity of the community to pay. One of the objects of a sound rate-fixing policy would be to maintain within a given community a reasonable relation between "productive" and "non-productive" power consumption. Both in productive and non-productive uses of electricity where power replaces labour, power consumption will rise in proportion to its cheapness as compared to the cost of labour. In other words, the potential expansion of power consumption in a region may to a certain extent, be measured by the ratio of labour costs to power costs in the area. A policy of power expansion, if the costs remain high in relation to the cost of labour, cannot, therefore, achieve all the desired beneficial results; lowering of power costs, therefore, becomes more imperative where labour is cheapest.

[Table 36, appearing on p. 299 of the text, has not been processed -- Ahuja]

11: India G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

sufficiency, Kerala should play the role of a net exporter of electric energy to these States. A zonal grid which is now planned to be laid in the South, is essential to make the most economic use of the power generating potential of the Southern States. Since the cost of electric generation is much lower in Kerala than in Madras or the other neighbouring States even after including transmission costs, Kerala may also be in a position to earn net revenue through export of electrical energy to the neighbouring States. This revenue could be utilized for capital formation within Kerala.

7.49 The State should review and revise its tariff policy for power sales specially with reference to consumption of power for domestic purposes.

Chapter 8

Transport

IN THE CONTEXT of a developing economy, the transport system has a special role to fulfil. Apart from opening up the country and linking all areas with each other, it has to meet the growing movement of raw materials on account of more rapid development of industry and rising levels of consumption and distribution. The particular relations of production, consumption and distribution obtaining in the State and changing, according to the emphasis of the Plans, entail certain characteristic tasks for the transport system of the State. In Kerala, for example the persistent food deficit of the State, necessitates movements of rice and other cereals by road and rail from adjacent States,[1] and foreign or coastal imports[2] through ports such as Cochin, Calicut or Trivandrum. Fish and fish-products are distributed from the ports by road, rail and waterways in local and inter-State interchange. From her fields and plantations orginate exports of coconuts, copra, pepper, ginger, cardamom, cashew kernels, tapioca, tea, coffee and rubber. The State's forests covering about a fourth of its area, furnish varieties of timber for clearance from one of the biggest timber markets in the world ; countryside distribution and foreign exports take place from Kallayi and Calicut. Exports of mineral ores, such as ilmenite, have to be handled from ports like Quilon or Chavra. The transport media serve continually, except for the interruption of the monsoon, in the carriage of raw materials, fuels, and essential construction and other goods such as cement, iron and steel, sugar and textiles. In particular, the transport network has to cater daily to the needs of industrial establishments, e.g., rubber and titanium factories at Trivandrum ; cashew industry at Quilon, the aluminium and ceramic industries at Kundara, paper and plywood factories at Trichur ; the coir and coir products of Alleppey ; the cement and sugar factories at Kottayam, the rayon factory at Perumbavoor ; the industrial complex at Alwaye comprising fertilizer, chemical, textile, glass and aluminium industries ; the saw mills and timber-based industries, soap, etc., in the Calicut area ; the big plywood factory at Baliapatam; the tile industry at Quilon, Trichur, Feroke, Calicut and other centres.

8.2 As regards passenger traffic, the Southern Railway carried 16.2 million passengers in 1959, the pressure of traffic being notable at Calicut, Quilon, Ernakulam, Alwaye and Trivandrum Central. The nationalized road transport services carried 65.3 million passengers in 1959. The passenger motor-boat services operating on the inland waterways carry 27,700 passengers daily. About 1,100 passengers

[1] Over 600,000 tons.
[2] About 80,000 tons in a recent year.

11: India G-4,5 (1960-1961) 1962 AWII Kerala AWII

embark and disembark every month at the two airports of the State in Trivandrum and Cochin.

8.3 The State's transport system has to meet not only the requirements of the internal movement of traffic and the needs of inter-State and overseas trade and commerce of the State, but also the traffic connected with the import and export trade of adjoining areas in the neighbouring States. Calicut and Cochin provide suitable inlets and outlets for the intake of oil fuels, cotton, hardware and machinery, fertilizers and foodgrains, and for exports of tea, coffee, etc.

The Transport System

8.4 The transport system of the State consists of:

A. Sections of the Southern Railway, 543 miles long; (broad gauge 331 miles; metre gauge 204 miles; mixed gauge 8 miles), serving port-towns such as Cochin, Quilon and Calicut, and other important industrial centres.

B. A road network made up of national and provincial highways (1,432 miles) and district and village roads (9,307 miles).

C. A unique inland waterway system of navigable rivers and coastal and cross canals, 1,178 miles long.

D. Thirteen ports, including a major port at Cochin, and two active minor ports at Calicut and Alleppey.

E. One hundred and eleven statute miles of airways, with airports at Trivandrum and Cochin.

8.5 Nearly 145,000 persons,[1] constituting 2.93 per cent of the working force of the State are engaged in transportation and account for an annual income of Rs. 8.697 crores.

8.6 The features of this system, particularly in relation to the physical and financial (investment) demands that the growth of the State's economy may make on it in the coming decade (1961–71) are highlighted here for each medium of transport.

THE RAILWAYS

8.7 In relation to the extent of area served (14,992 sq. miles), the railway mileage per 100 square miles of State territory (3.6 miles) compares favourably with all-India (2.7 miles) and Mysore (2.2 miles); Madras State is better served with 4.4 miles per 100 square miles. The railway mileage per 100,000 of population in the State is however, only 3.4 miles, slightly less than a third of what it is for all-India, viz., 9.5 miles. The corresponding figures for the adjoining States of Mysore and Madras are higher being 6.2 and 5.6 miles respectively. The comparatively lower average

[1] 1951 Census figures.

[Text continues on p. 127]

11: India G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

for Indian Airlines Corporation.[1]

8.38 The absence of an air-link between Calicut and Trivandrum is being keenly felt, as other forms of travel including railways to and from Kerala's capital involve a long and time-consuming journey with the difficulties attendant on the break-of-gauge at Ernakulam.

ECONOMIC DEVELOPMENT AND TRANSPORTATION DEMANDS IN KERALA DURING 1961-71

8.39 An assessment of traffic that the implementation of the programmes proposed elsewhere in this survey will generally indicate that an additional overall traffic of 5 million tons can be anticipated during 1970-71. The nature, magnitude and composition of the anticipated traffic are set out in Table 41.[2]

8.40 The estimate does not take into account traffic in certain items, for example, coconuts and certain types of consumer goods. An allowance of 10 per cent may be made for these omissions. Further, the transport system of the State, besides meeting the additional demands of its own traffic, will have to bear the burden of traffic of other States, such as Madras or Mysore, which is handled for them at Kerala's ports[3] and on roads and railway sections[4] within the territory of the State; the additional traffic on this account may amount to 1 or 1.5 million tons by 1970-71. The overall growth in traffic may thus be between 60 and 65 per cent over the present level.[5] The transport arrangements in the State have thus to be planned and developed to meet an additional traffic of 6.5 to 7 million tons by 1971.

8.41 There may be some changes in the character of the traffic. For instance, there may be a decline in the traffic in firewood by about 100,000 tons as oil and other fuels are coming in as substitutes. Changes in technology in the Fourth Plan period presage the disappearance of the traffic in gypsum (145,000 tons) to Alwaye and substitution by imports of sulphur (100,000 tons) *via* Cochin. Decline in foreign imports of foodgrains is anticipated, while increased imports from more distant sources inside the country are envisaged.

8.42 The distribution of the State's additional traffic between different media (including the demand for ports' services) as anticipated, is presented in the table below. The heavy dependence of Kerala on the import of materials for industry from outside is reflected in the preponderant inter-State rail traffic. By 1971 the increase in the rail traffic in the State over its traffic in 1958-59 may be about 60 per cent.[6]

[1] An Air Traffic Survey has since been completed by NCAER for the Indian Airlines Corporation. Besides estimating the traffic potential of the circular route in the Southern Region, the Survey has recommended air linking of Calicut, inclusion of Trivandurm in the Madras—Tiruchirapalli, Madurai—Colombo air route, location at Thirukakara of an airport for Cochin and Alwaye, terminal facilities at the Cochin Airport, etc.
—Vide *Air Traffic Survey—Southern Region*, NCAER, 1962

[2] Predominantly at Cochin.

[3] Mostly on the highway and railway section between Ernakulam and Shoranur.

[4] The current traffic by road, rail and waterways is estimated at 10.8 million tons.

[5] The cross traffic to or from Cochin and from or to other States is taken into account.

[6] [Table 41, appearing on p. 296 of the text, has not been processed -- Analyst]

11: India. G-4, 5 · (1960-1961) 1962 AWll Kerala AWll

TABLE 6

VALUATION OF FOREIGN EXPORTS FROM THE PORTS OF COCHIN, ALLEPPEY AND CALICUT
(Rs. lakhs)

Some important commodities of export	*1953-54*	*1954-55*	*1955-56*	*1956-57**	*1957-58*
Cardamom	22.44	32.84	50.17	54.84	55.90
Cashew(kernels and liquids)	927.55	1,014.52	1,155.12	1,112.02	1,141.82
Coffee	72.39	82.88	93.69	76.50	90.73
Coir and Coir Products	804.00	731.37	856.86	878.09	704.87
Fish and Prawns	102.69	79.34	31.85	123.86	149.33
Ginger	27.94	33.24	58.71	61.40	39.23
Metals, Minerals, Ores	21.56	22.78	28.93	77.10	60.77
Lemon grass oil	72.62	104.73	130.65	147.00	138.41
Pepper	962.13	569.81	378.61	341.69	295.67
Tea	1,912.96	2,196.86	1,992.17	1,974.75	2,434.78
Others	235.72	443.83	591.64	525.75	491.40
Total Value of Foreign Exports	*5,162*	*5,312*	*5,369*	*5,313*	*5,603*
Total Value of Exports to Ports of India	*2,238*	*2,193*	*2,469*	*2,404*	*2,318*
Value of Total Exports	**7,400**	**7,505**	**7,838**	**7,747**	**7,921**

*Value of exports from Calicut includes exports to both foreign and Indian ports.
SOURCE: *Economic Review of Kerala*, 1959.

TABLE 7

CUMULATIVE PERCENTAGE DISTRIBUTION OF NUMBER OF HOLDINGS AND LAND AREA OF HOLDINGS IN TRAVANCORE-COCHIN AREA AND THE MALABAR DISTRICT

Grade of holdings	*Travancore-Cochin*		*Malabar*	
	No. of holdings	*Area*	*No. of holdings*	*Area*
Up to 1 acre	66.72	16.49	28.91	2.43
Up to 2.50 acres	86.47	36.96	51.52	8.22
Up to 5 acres	94.84	57.07	69.55	17.68
Up to 10 acres	98.35	73.35	83.79	32.30
Up to 20 acres	99.50	83.59	93.91	52.58
Up to 40 acres	99.86	90.15	97.88	68.57
Up to 100 acres	..	..	99.62	82.37
All	*100.00*	*100.00*	*100.00*	*100.00*

SOURCE: *Kerala 1959: An Economic Review*, Government of Kerala (1960).

12:Peter E-5 (1939, 1949)1963 AWll Kerala AWll

"Europeanism" further enhanced its influence in Malabar with the introduction of new industries and capitalistic enterprise. The coconut, cashew nut and coir industries employ thousands today and have created amongst the people an even greater dependence on the fluctuations of world prices than in the days of the pepper trade. Weaving, tile factories (such as the one founded by the Basel Mission), saw-mills, match factories and metal industries have given many people a new outlook on life which they could never have had in the old days, and has profoundly changed their traditional concepts. Prohibition introduced by the Congress Party Government, with its consequent forbidding of the ancient profession of toddy tapping, has thrown many Tiyas out of work, obliging them to seek their livelihood elsewhere, and modifying for this reason the traditional structure of their economy and family life.

Greater and better medical facilities, as well as a growth in industrial productivity, have brought about a correspondingly sharp rise in the population, so much so, indeed, that today Kerala ranks first in density to the square mile out of the whole of India. Agricultural prosperity has unfortunately not kept pace with this advance, making it often difficult for everyone to obtain food, especially when the monsoon fails, as it often does in the latter part of the year. Foodstuffs, especially grain, have thus to be imported from outside, and when this is not sufficient, many seek work in other parts of the world, leaving their families for years at a time, to emigrate and hire themselves out as labourers in Ceylon, Singapore, and the Malay Federation.

It is not surprising, under the circumstances, that the old order in Kerala has crumbled. Of the rajas and maharajas of old, none are any longer in positions of responsibility, those of Cochin and Travancore having also been made destitute by the recent re-arrangement of States in India. The Nambudri Brahmins are, perhaps, those who, because of their priestly character, continue more than anyone else, to lead the ancient, traditional life. Many of them, however, have gone in for the new enterprises, and if they do not always themselves own and direct them, they have invested funds in them. The younger members of the *illams* appear to be increasingly dissatisfied with their lot, and do not seem prepared to accept the old imperatives of occupation and succession. It may not, after all be just a coincidence that the Communist Party Government now in power in Kerala is headed by a Nambudri Brahmin.

The Nayar caste is no doubt the one that has been the hardest hit by the sweeping changes brought about by altered conditions. But its

6:Spate N-4 (no date)1954 AW1 India
Kerala AW1

Towns

The towns of Kerala are for the most part either ports or crossing-points on the backwaters. There is virtually no indigenous maritime tradition, but from very early times spices attracted traders from E and W: Arabs, Graeco-Romans, Chinese.[81] With the Discoveries the Malabar coast became the scene of a fierce struggle between the Portuguese and their Muslim and European rivals. Relics of the era of European conflict are the tiny French settlement of Mahé (26 sq mls, poptn (1941) 14,092) and the exclaves of former British territory at Cochin itself and in Travancore

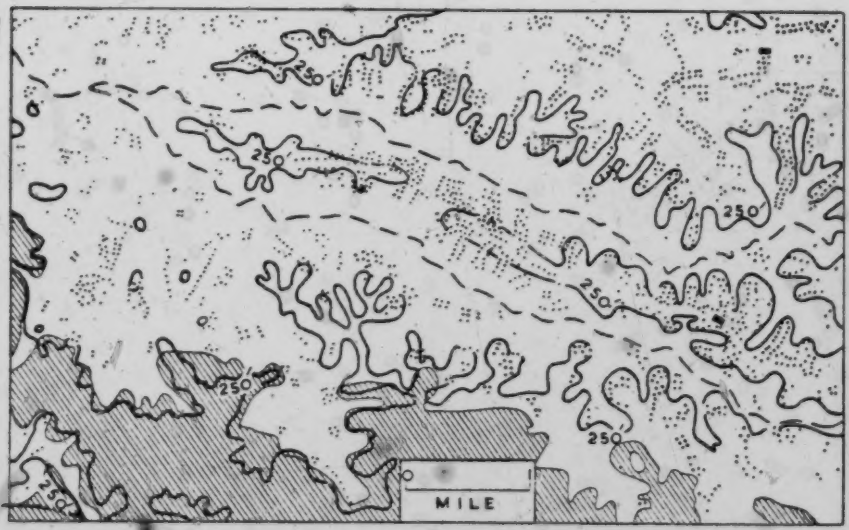

Fig. 123.—KERALA: INLAND SETTLEMENT. 5–10 mls SE of Palghat town; lateritic foothills in approach to Palghat Gap. Dots, habitations surrounded by groves; shaded, forest; blank, cultivation; broken lines, seasonal streams. SOI 58 B/10; courtesy SOI.

at Anjengo and Quilon (Tangasseri), which last had an area of 99 acres!

In Malabar Dt Tellicherry (36,320) exports most of the Coorg coffee and some pepper and copra; Calicut (158,724) has a similar trade but is more important administratively. Both ports are mere roadsteads, ships lying two or three miles offshore and lighters working from one or two piers, but at Tellicherry the shelter of offshore reefs enables some traffic to be carried on during the monsoon.

Cochin is far more important: it really consists of two adjacent towns, ex-British Cochin (26,320) and Cochinese Cochin or Mattancheri (53,346). Cochin is in fact the oldest European settlement in India; on Christmas

[81] On the Chinese shipping, see Ibn Battuta, *ed. cit.*, 235–6.

6:Spate N-4 (no date)1954 AW1 India
Kerala AW11
Laccadives AZ4
Maldives AZ5

Day 1500 Cabral arrived, and from then until the Dutch supplanted them in 1663 the Portuguese were in alliance with the rulers of Cochin against the Muslim Zamorin of Calicut. The port has considerable locational advantages: it is central on the backwaters, the Palghat Gap lies about 125 miles (by rail) to the NE, and it is about 300 miles nearer Aden and Durban than is Bombay. It may even rival Colombo as a transit port, as a call at Cochin adds only 40 miles to the Aden-Fremantle run.[52] The development of the modern port was for long impeded by its curious political situation; it lies on a breach in the long spit separating the great backwater from the sea, but while the major installations and the approaches lie in what was British territory, the inner harbour—in which much of the trade is carried on—is in Cochin state, and much of the backwater was Travancorean. Real development—including the cutting of a channel through the bar across the natural breach, and much reclamation—began only in 1920–23; later a 3-mile approach channel was dredged to a width of 450 and a depth of 37 ft, so that the inner harbour is now accessible to any ship which can pass Suez. Rail and road bridges cross the backwater, and a large airport has been built on reclaimed land; the old metre line to the SIR through the Palghat has been changed to BG. The volume of trade increased from 450,000 tons in 1920 to about 1,250,000 in 1950, while the number of ships using the port has more than trebled. Normally rice from Burma and Indo-China formed two-fifths in bulk of the total trade; mineral oil is also a major import. The exports are the usual Kerala ones: coconut products, especially coir and copra, tea, rubber, cashew nuts. Across the backwater is Ernakulam (46,790), capital of Cochin, with important soap factories, the largest owned (naturally) by Tatas: rice milling, as at Mattancherri, is also important. Trichur (57,524), the largest town of Cochin, has cotton spinning and weaving mills and tile factories; it shares with Palghat (55,160) command of the gap.

Travancore is less urbanised than Cochin, but Trivandrum (**186,931**) is the capital of Travancore–Cochin state. Alleppey (**116,278**) and Quilon are ports of ancient fame now decayed; mere roadsteads, they still carry on a considerable backwater traffic. Alleppey, protected by a mudbank, is slightly the better port, but Quilon has the advantage of its situation on the metre line from Trivandrum through the Shencottah Gap.

The Maldive and Laccadive Islands

These groups of coral atolls extend from the Equator to about 15° N, 180–300 miles from the Malabar coast. The Laccadives and Minicoy are attached to Madras, the Maldives (which have their own Sultan and constitutional government) to Ceylon: these affiliations represent historical accident merely.

[52] *Handbook of Commercial Information for India* (Delhi, 1937), 79; personal information from Sir Robert Bristow.